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USSR Report

TRANSPORTATION

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CIVIL AVIATION

ANTONOV BUREAU DEVELOPING NEW STOL TURBOFAN FOR USE IN FAR NORTH

Moscow IZVESTIYA in Russian 2 Nov 83 p 6

[Article by V. Belikov, IZVESTIYA correspondent: "An Airplane for the North"]

> [Text] An airplane with unusual outlines leisurely approached for a landing along a steep descent path. The red surfaces of its wings and tail assembly--the distinguishing sign of polar aviation air ships--flashed in the sun.

Touching the concrete gently, the aircraft began to lose speed rapidly and, traversing about half a kilometer, it froze on the strip. Now, one could become more closely acquainted with the short take-off and landing [STOL] transport aircraft which had been especially created for trips to the Arctic, regions of the Far North, and the polar region and to hard-to-reach places in Siberia and the Far East.

There has always been a need for such a winged assistant for those who live and work in the upper latitudes. It became especially acute in recent years when the development of the North acquired unprecedented scales and the reliable worker, the propeller-driven Il-14--began to wear out and become obsolete, abandoning the snow-covered airfields and ice landing strips without a worthy replacement.

"But where is a new aircraft?" the first secretary of the Nizhnekolymskiy CPSU raykom, A. Chikachev, asked the question on the pages of IZVESTIYA (No 240/241). An airplane is needed which is better, not worse, than the veterans." And here the OKB [special design office] lead by Chief Aviation Designer and Academician O. Antonov is testing its offspring--an airplane of the new generation of turboprop aircraft developed by this famous collective.

"We have been engaged with the creation of transport air ships for many years, says the deputy chief designer, Ya. Goloborod'ko. "Methods for the design of the most important elements have been developed and comprehensively tested in practice--the highly raised wing and the engines placed on it, the fuselage with the spacious cargo compartment, the landing gear intended for the take-off and landing from unimproved sites...."

The typical features of the company style of O. Antonov's OKB are also inherent in the new AN, but they are embodied at the most modern technical level, higher than that of preceding models. The jet turbines which are unusually located are reliable removed from the zone where particles of soil, chunks of ice, and other solid objects from the ground may land in them by chance. The stream of gases which is ejected from the turbine nozzle seems to "stick" to the upper surface of the wing, increasing its lift.

"The jet thrust of the engines," explains the designer, "permits the airplane to develop a maximum speed of up to 720 kilometers per hour, climb to an altitude of up to 11 kilometers, and transport about 10 tons of cargo. These are the highest indicators of the aircraft's capabilities which, most likely, must be used infrequently. Much more important for such an arctic airplane is the great range of cruising speeds right down to the lowest, which will provide it with the capability to conduct ice reconnaissance for many hours or to fly over large territories with trappers, hydrologists, and fishermen on board."

The sound of an auxiliary power unit which had begun to operate was heard above the parking area of the new AN--the pilots had turned on an additional source of electric power and heat for their airplane. The ramp of the cargo hatch was lowered slowly, being turned into a ramp for the entry of wheeled equipment and to feed boxes, bales, and equipment being transported into the fuselage. Heavy containers can easily be moved along the roller chutes on the floor of the cabin or using a crane jib fastened to the ceiling.

As soon as the loading is completed, the ramp is raised, tightly covering the hatch opening--the compartment is hermetically sealed. At any altitude and under any temperature of the outside air the air conditioners maintain the necessary comfort inside the fuselage. Is it necessary to say how important this is for the normal operation of the crew and the specialists who are on board, especially if the trip is accomplished in winter, during the polar night?

Test pilot S. Gorbik who familiarized me with the crew's cabin first of all noted the comfort and the wonderful view for the pilots: "Everything can be seen, just as in a wide-screen motion picture!"

The electronic-computer navigation complex permits programming the flight ahead of time, considering all necessary maneuvers on a long route. A special map-plotting board immediately indicates the location of the red-winged aircraft which, we will hope, is to fly many million kilometers in the sky of the North.

6367
CSO: 1829/112

CIVIL AVIATION

STATUS, FUTURE PLANS FOR AEROFLOT'S METEOROLOGICAL SUPPORT

Moscow VOZDUSHNYY TRANSPORT in Russian 12 Jan 84 p 3

[Article by A. Vasil'yev, acting director, Gidromettsentr SSSR [Hydrometeorology Scientific Research Center of the USSR]: "Weather Forecasting with an ASU [Automatic Control System]"]

[Text] An automated system of navigation calculations for Aeroflot aircraft, developed by GosNII GA [State Scientific Research Institute of Civil Aviation] specialists, began operating about 10 years ago at the base of the USSR Gidromettsentr computer complex. The USSR Gidromettsentr now is sending meteorological data necessary for normal operation of the automated flight navigation system (ASShOP) to the Main Computer Center of the MGA [Ministry of Civil Aviation] twice daily.

Last year a new operational subunit was created at the USSR Gidromettsentr--the Regional Aviation Forecast Laboratory, which performs the functions of a Regional Forecast Center of the International Civil Aviation Organization (ICAO). Forecasts of wind and air temperature on all the basic civil aviation routes, as well as of weather dangerous to aircraft, are prepared in chart form here 24 hours a day. The forecasts cover the territory of the USSR, West Europe, Japan, North Africa, and India, and significantly overlap the zone of responsibility established by ICAO.

According to Ministry of Civil Aviation data, the annual economic gain just from use of the wind forecasts prepared by the Regional Forecast Center has amounted to about 5,000 tons of aviation fuel and 800,000 rubles. Gidromettsentr scientific research has been concentrated on development of new methods --and on improvement of existing methods--of forecasting weather phenomena important to aviation which affect aircraft takeoffs and landings, as well as flights en route. Only in recent years a number of procedural manuals have been issued on the problems of forecasting turbulence, hail, thunderstorms and squalls, aircraft icing, the conditions attending strong low-level wind shear, and so forth. Quite recently, a procedural manual for cockpit personnel and forecasters on the meteorological conditions of flights at low altitudes was published.

However, the quality of weather forecasting still does not fully meet civil aviation requirements. Thus, according to ICAO data, about 20 percent of the flight accidents over the past 10 years have been related to poor weather conditions; at the same time, in approximately half the cases the weather information provided to pilots turned out to be inaccurate.

It should be noted that the lag in the quality of forecasts behind aviation's requirements has always existed, and only its magnitude in time has changed. Along with purely "meteorological" reasons (difficulties in measurement, the complexity of atmospheric processes and the impossibility of a precise mathematical description of them), this lag also has been a result of the rapid development of aviation, which leads to the necessity for forecasting new weather elements and phenomena and for increasing the accuracy and detail of forecasts. Low-level wind shear and marked temperature inversions may be given as an example. Not so long ago these relatively rare phenomena did not require study, but their significant effect on aircraft takeoffs and landings has been established in recent years.

Further improvement in the effectiveness of meteorological support for aviation is possible only when scientific research, including experimental research, is intensified; when the forms of service are improved; and when the level of automation in providing meteorological support for flights is increased. The degree to which forecasting has been automated at the USSR Gidromettsentr already is very high.

In the future, further development of operations to automate forecasting is being proposed, particularly the elaboration of methods of preparing a chart of weather phenomena utilizing data from radar observations over the entire territory of the USSR and forecasts of probable ceiling and visibility for 1 to 3 hours at a number of Moscow airports.

At the same time, studies of more improved objective methods of forecasting will be continued: predicted ceiling and visibility in fog and unfavorable conditions related to wind change (wind shear, turbulence), thunderstorms, icing, and so forth, which may be used by a forecaster in the operational procedure of preparing forecasts for an airport at first hand.

The materials of the December (1983) Plenum of the CPSU Central Committee calls upon us to utilize production and scientific research potential more fully and with high efficiency. All staff members of the USSR Gidromettsentr realize that improvement in meteorological support for aviation and increasing forecasting accuracy are a necessary condition for increasing flights' economy, regularity and safety. For this reason, we will apply all our efforts and knowledge to resolve this important problem.

8936
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PROCESS FOR RENOVATING AIRCRAFT TIRES TESTED

Moscow VOZDUSHNYY TRANSPORT in Russian 4 Feb 84 p 3

[Article by G. Strunin, VOZDUSHNYY TRANSPORT correspondent: "Aircraft Tires Passed Inspection"]

[Text] The collective of the takeoff and landing systems sector of the GosNII GA [State Scientific Research Institute of Civil Aviation], jointly with specialists of the Scientific Research Institute of the Tire Industry and tire and tire repair plants, with the participation of the ATB [air maintenance base] of the Vnukovo Production Association, have conducted combined research and flight test operations to introduce the use of aircraft tires manufactured and renovated with domestic materials based on synthetic rubber.

The technology for renovating tires was developed, plant static tests were conducted, and then special flight tests were made on a Tu-154B aircraft at the GosNII GA. A characteristic of these tests was the extremely exacting check of the tires under different operating conditions, both under normal conditions and in special cases of landings and aborted takeoffs.

Controlled operation of the tires on Tu-154B aircraft under scheduled flight conditions has demonstrated their high reliability.

Work now is being carried out in the industry's plants to expand the variety of tires subject to renovation. In addition, the problem of repeated renovation of such tires is being resolved. Together with the industry employees, an important contribution in conducting these operations has been made by GosNII GA staff members N. Martynyuk, Ya. Peyko, A. Bondarenko, Yu. Yermilov, V. Keyenofontov and A. P'yankov and Vnukovo ATB employees P. Moskvin, I. Klokov, N. Stepanov, I. Makarov and others.

Important creative work lies ahead: the results of the tests have to be put into practice.

8936
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CIVIL AVIATION

AIR SERVICE OPENED TO PENDZHIKENT IN TAJIK SSR

Moscow VOZDUSHNYY TRANSPORT in Russian 9 Feb 84 p 1

[Report by special correspondent A. Larenok: "The First Flight to Pendzhikent"]

[Text] The completion of a scheduled flight on a new route and landing at a new airport is always a holiday for aviators, and especially for passengers. I sensed this very strongly when, after passing over the gigantic Gissar, Zeravshan and Turkestan ranges and leaving Leninabad with its low overcast behind, we began descending, performing complex maneuvers over a meandering river and among dome-shaped peaks covered with sparkling snow... Here, spread before the eyes, the excavations of the ancient city, one of the oldest in Central Asia, are visible. Different trades, farming and livestock-raising flourished here in the 5th to the 8th centuries. Pendzhikent had a reputation for its historical and cultural traditions as long ago as that distant time. The many archeological relics attest to this.

One more turn, and here before us is a durable hard-surface runway. The crew of S. Trifonov, A. Pukhal'skiy and V. Sturov make a skillful landing.

The construction workers had to perform a colossal amount of earth-moving operations, shifting 300,000 cubic meters of soil, including rock. In some places the depth of the soil filled in the runway bed reaches several meters!

...Reducing speed, our Yak-40 gently rolls down the runway. Red banners are flying. An orchestra shines with gold. We descend the ramp. Girls in national costume offer bread and salt to the aviators.

A. Umarov, first secretary of the Pendzhikent Gorkom, opens the festive meeting. He says that ancient Pendzhikent is attracting more and more Soviet and foreign tourists every year. In order to reach here by motor vehicle from the republic capital, one must travel 13 to 14 hours over difficult roads, through Samarkand. But now an airplane brings you from Dushanbe to Pendzhikent in 45 minutes. The establishment of a direct air link with the republic capital and with the oblast center of Leninabad will be of great importance for further development of the economy and culture of this mountainous region...

Many heartfelt words were spoken at the meeting about the aviators and the construction workers--the collectives of mechanized crew [kolonna] No 11 of the republic's Ministry of Highway Construction and Maintenance, and PMK-278 [mobile mechanized crew-278] of the TaSSR Ministry of Construction. City workers, geologists, kolkhoz workers and young persons also helped to build the airport. In the course of construction both the general contractor and the customer--the Tajik Administration--displayed a great deal of resourcefulness and initiative and a state approach to the work. As a result, a significant amount of funds were saved.

The aircrew take their places in the cockpit. In several minutes we are once again airborne. Goodbye and prosper eternally, ancient Pendzhikent.

8936
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MOTOR VEHICLES AND HIGHWAYS

CREDIT CARD GASOLINE PURCHASE SYSTEM TESTED IN NOVOSIBIRSK

Moscow ZA RULEM in Russian No 1, Jan 84 p 7

[Article by B. Banchevskiy (Novosibirsk): "By Credit Card"]

[Text] A new system of supplying fuel on credit is now successfully undergoing operational testing in Novosibirsk. Our special correspondent discusses it.

Novosibirsk. Service station No 25. The middle of the work day. The vehicles drive up first to one pump and then to the next. We begin to observe one of the trucks. There he has stopped at a pump ... The driver has gone up to the window ... Now he must turn in the coupon and return. But -- there is an annoying hitch: the inspectors have arrived at the station and the attendant is busy. It is necessary to wait about 10 minutes, or maybe even 20. A line is forming at the pump.

A bus drives up. But its driver does not go to the window; he goes to a box hanging on the wall. We come closer. The driver takes out a black card which is only a little larger than an ordinary gas coupon, puts it in the slit in the box, punches some combination of figures on the buttons, removes the card and returns to the bus. The vehicle has been fueled.

I ask the driver to wait a minute. We introduce ourselves. He is Ivan Kuznetsov from the 9th passenger automotive transportation administration. I ask him his opinion about the new system for supplying fuel, which has come to be called "with the use of credit cards."

"I have only been driving for 3 years. And all that time I have been working with this magnetic ticket. Once for some reason they gave me ordinary coupons -- and I had to stand in line for gas... Of course the new system is better! I raise both hands in favor of it! It is both simpler and more modern."

Sergey Yeykhin, a comrade of Kuznetsov's, comes up to us.

Drivers like the magnetic cards. They say they are so much better that there is no comparison. The main thing is that you lose almost no time on fueling."

That is what the drivers say. And their opinion is probably the most important one since it is precisely for them, for their convenience, that the system is being created. But its effectiveness is such that with extensive introduction throughout the country (and this is precisely what can be expected in the next few years), it will become considerably simpler, and the entire organization of accounting for a distributing automotive fuel will become more reliable.

We continued our familiarization with the new system in the office of the chief of the Novosibirsk administration of the RSFSR State Committee for Supply of Petroleum Products, G. I. Tikhonov. The organization he is in charge of has taken on responsibility for conducting the experiment. It also provided the initiative for using credit cards.

"That was way back in 1977," says Gennadiy Ivanovich. "The efficiency experts and engineers of our administration's computer center suggested developing the equipment and they themselves made the first variant, which made it possible to automate the process of issuing gasoline at service stations. Questions immediately arose: how does one keep track? will the automotive enterprises accept it? the economic effect? In the calculations everything turned out perhaps even too good. We decided to test it. We were given support -- and within 2 years we received for a "trial run" equipment that had been manufactured by the special design and technology bureau of the scientific production association for service station equipment of the State Committee for Supply of Petroleum Products. Of course it was much better than our makeshift equipment. And literally within a couple of days there arrived a new model for which the developers had studied operating experience. Incidentally, this equipment was exhibited at the Exhibition of the Achievements of the USSR National Economy and received an excellent rating from specialists.

Gennadiy Ivanovich also spoke about problems that arose during the experiment. Let us note at once that some of them were solved in the design of the new equipment. It is becoming more reliable to operate under extreme temperature conditions, which is especially important for Siberia. It depends less on the fluctuations in the energy supply: previously there were breakdowns when the electric current in the network dropped. The problem of the credit cards themselves has still not been solved. The specific nature of the work of the drivers requires that the cards be quite durable. And if the card is bent or cracked it can be rejected. Incidentally (and this is natural at first) there is a great deal of curiosity about the magnetic coupons. Many are interested in what is inside them ...

And in fact what is inside them?

The idea of the credit card is that an invisible magnetic drawing is placed on it. Only a special device can "read" it. It "recognizes" the brand of gasoline, the state number of the motor vehicle, the number of liters of fuel which "remain" on the card, and a three-digit key, that is, the combination of figures, known only to the holder. All this information is coded on the card before it is issued to the driver.

And what about the card's subsequent route and the "tracks" it leaves at the service station?

The beginning of this path is in the first paragraphs of this report. And so the drivers, I. Kuznetsov and S. Yeykhin rapidly and easily fueled their vehicles and departed. The automatic machine in the service station punched on a tape all the information contained on the magnetic coupons. Within 10 days the tape is taken into the computer center. And we shall set out for there at once.

The machine time of the electronic computer is divided up to process the data from the service stations in which the automated machines are installed. The operator transfers the punch tape to a magnetic disk, and literally within a couple of minutes the computer produces a summary tablogram containing detailed information about the issuance of automotive fuel: to whom, how much, and when ...

Drivers I. Kuznetsov (left) and S. Yeykhin standing with magnetic cards in hand at the automatic machine for dispensing fuel on credit. Two groups of keys can be seen on the machine: on the left one enters the code and on the right, the number of the pump.

Actually, this is already a document. The same document which it usually takes tens and hundreds of specialists several days to compile. And of course this kind of information is valuable because of its easy access. They wait for it in the administration of the State Committee for Supply of Petroleum Products, in the bank and at the automotive enterprises. When the expenditure of fuel is limited, the speed of processing of the data makes it possible not only to determine precisely the allotted supplies, but also to save on fuel.

We discussed this with the head engineer of the 9th passenger automotive transportation administration of Novosibirsk, V. M. Prokhorov.

"The credit system creates possibilities of stricter control of fuel use. An individual agreement concerning material responsibility is concluded with each driver. The possibility of dubious situations is precluded: lost cards, incorrect signatures. The credit card is kept at the enterprise and issued to the driver along with the trip sheet. Moreover, if one card is used, say, by two drivers working together, they also conclude an agreement concerning mutual material responsibility, so that both bonuses and overexpenditures are divided between them -- and this is an embodiment of brigade principle. In our case the figures are more eloquent than any words: the complex of measures, in which a central position is occupied by the changeover to the credit system, made it possible for our automotive enterprise in 1982 to reduce the overexpenditure to 34,700 tons (in 1981 it was 561,000) and during the first half of 1983 we even achieved a savings."

Such is the opinion of transportation workers. It is fully corroborated by the director of the Novosibirsk distribution petroleum base, V. N. Baranov. He can see reserves for saving on scarce fuel in the oblast and city, and therefore he considers it necessary to arrange as quickly as possible for mass output of the new equipment, which will probably be handled by the Ministry of the Instrument Making, Automation Equipment and Control Systems.

"We have already been visited," says Vladimir Nikolayevich, "by specialists from Kazakhstan, the Ukraine, Estonia, Leningrad and many other places. The people come to gain experience. I would like for them to have a real opportunity to use it. For this is precisely the goal toward which party and government decisions direct us.

The prospects of the system for distributing fuel and lubricants are truly immense. Even in the near future the automatic machines can be provided for service stations in large coal mines, open pit mines, and large enterprises. In Novosibirsk, for example, they are preparing to install equipment on the routes of interurban buses and motor vehicles for centralized shipment of cargo. The information processed by the branch computer centers and that which is transmitted over teletype will immediately be included in the same tablogram. It is simple and economical.

Such is the more distant future: with the development of communications systems it will be possible to utilize credit in small population points and on highways. And private vehicle owners will also be able to purchase the cards. The question is not so much how precisely to evaluate the economic possibilities of credit in local areas, as how progressive practice can be efficiently introduced. Let us just recall that an automatic machine that takes care of practically all accounting makes it possible to release a large number of people for productive labor. In Novosibirsk alone, with complete introduction of credit, instead of 210 people 15-20 skilled specialists will be quite capable of handling the work. And throughout the country?

11772
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CEMA EFFORTS TO PRODUCE STANDARDIZED DIESEL ENGINES

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 83 pp 45-47

[Article by Miloslav Shimonovski, general director of the CSSR Association of Motor Vehicle Plants and chairman of Section 7 of the CEMA Standing Committee on Cooperation in the Area of Machinebuilding: "Development of Modern Diesel Engines"]

[Text] Today the motor vehicle industry of CEMA member-countries faces an important task--to achieve a substantial reduction in fuel consumption and in harmful exhaust emissions of manufactured vehicles and a decrease in motor vehicle noise.

Considerably lower operating costs, especially for trucks, can be obtained by replacing gasoline engines with diesel engines, which by the economical operating cycle alone--higher compression ratio and lower rotational speed--increases efficiency by 15-30 percent; this efficiency can be increased even more by using a turbo-supercharger. In view of the fact that trucks with carburetor engines represent a large part of the motor vehicle fleet in the CEMA member-countries, particularly in the USSR, acceleration of its dieselizing offers to be highly effectual. Of the socialist countries, only the GDR and CSSR have completed dieselizing trucks.

The motor vehicle fleet in the CEMA member-countries is constantly growing. The following data indicate this. Whereas in 1970 there were 609,300 passenger cars produced in the People's Republic of Bulgaria (PRB), the GDR, the Polish People's Republic (PPR), the Socialist Republic of Romania (SRR), the USSR and the CSSR, in 1982 already 2,011,100 were produced. Bus production also increased considerably (Tables 1 and 2).

Therefore, it is quite apparent that any savings, even the smallest, recognized by the production of more improved models, in terms of the entire fleet, has a significant economic impact.

Table 1. Passenger Car Production (in thousands)

Country	1970	1980	1982
PRB	7.8	15.4	15.0
GDR	126.6	176.8	182.9
PPR	64.2	351.1	229.1
SRR	23.6	88.2	103.7
USSR	344.2	1327.1	1306.9
CSSR	142.9	183.7	173.5

Table 2. Bus Production (in units)

Country	1970	1980	1982
PRB	643	2,068	2,202
HPR	5,983	12,406	11,819
GDR	2,587	2,870	2,469
Cuba	300	1,846	1,657*
PPR	8,967	13,123	9,474
SRR	2,604	4,096	...
USSR	47,363	85,252	85,665
CSSR	2,602	3,303	3,380

*1981

PROGRAM OF SCIENTIFIC AND TECHNICAL COOPERATION

The factors cited above and the fact that not a single country, taken separately, is in a position to ensure the development of new motor vehicles and engines at the necessary highest level, in a relatively short period of time and without excessively large capital investments have given impetus to the scientific and technical research under the theme "Development of New, Advanced Types of Motor Vehicles, Permitting More Efficient Use of Them with Minimal Pollution of the Environment", included in the Long-Term Target-Oriented Program of Cooperation of CEMA member-countries in the field of machine building.

Section 7 of the CEMA Standing Committee for cooperation in the field of machine building--"Motor Vehicle Engineering"--has prepared within this theme the Program for Developing Advanced Diesel Power Plants for Trucks. This program is being implemented on the basis of the Treaty on Multilateral Scientific and Technical Cooperation, dated 9 October 1981. It includes four subprograms, each of which is directed at developing power plants of a specific category.

The first subprogram calls for development of diesel power plants for motor vehicles with a 1-1.7-ton carrying capacity. Based on it, an in-line, liquid-cooled, four-cylinder engine is being developed. It has a 2.445-liter displacement volume, a 50-kW power rating, a minimal specific fuel consumption

of 250-235 g/kW·h and is suitable for use in small delivery vehicles and possibly in ambulances.

Improvement of the engine is envisioned later, when fuel consumption will be lowered even more by direct injection. The engine's design makes it possible to increase its power more by super-turbocharging. The SRR is the development coordinator for this engine.

Within the framework of the second subprogram, the development of diesel power plants for motor vehicles with a 3-ton carrying capacity is planned. According to it, an in-line, liquid-cooled, four-cylinder engine is being developed, with a 3.595-liter displacement volume, a nominal power rating of 61 kW and a minimal specific fuel consumption of 240 g/kW·h. The engine will be used in small trucks, delivery vehicles and small buses.

The piston stroke of this engine will be increased to 120 mm in a later stage of development, which with a lower rotational speed will yield additional fuel savings. Later it is planned to introduce more powerful models equipped with turbosuperchargers. The CSSR is the work coordinator for this subprogram.

The third subprogram provides for development of diesel power plants for motor vehicles with a carrying capacity of 8 tons and more. Within its scope, an in-line, four-stroke, six-cylinder, liquid-cooled engine is being developed having a 11.946-liter displacement volume, a nominal power rating of 148-224 kW and a minimal specific fuel consumption of 230-216 g/kW·h (216 is for supercharged engines). It is suitable for use in vehicles with a large carrying capacity, trailer trucks, truck tractors, buses and heavy farm tractors. The CSSR is coordinating the scientific research work within the scope of this subprogram.

The fourth subprogram covers diesel engines with power ratings of 265-331 kW for motor vehicles with a carrying capacity over 8 tons. Based on it, a liquid-cooled V-8 engine is being developed with a 17.241-liter displacement volume, a nominal power rating of 280 kW and a minimal specific fuel consumption of 216 g/kW·h, intended for motor vehicles with a large carrying capacity, trailer trucks for long-range hauling and for truck tractors. The USSR is the work coordinator for the fourth subprogram.

Development of the new engines under the individual programs must be completed by the end of 1985.

THE NEXT STEP--SPECIALIZATION AND COOPERATION

The task of organizing specialized and cooperative production of advanced diesel engines, which is also being accomplished under the work plan of Section 7, is related to this theme being formulated on the basis of multilateral scientific and technical cooperation of CEMA member-countries and the SFRY.

Here I would like to call attention to the fact that presently the production of diesel engines for motor vehicles in the CEMA member-countries is quite

disjointed. A large number of different engines of the same power rating category are being produced.

Such an extent of specialization, where a specific model line of engines would be produced by one or two manufacturers to meet the demands of other CEMA member-countries, is as yet a remote prospect, since the necessary production structural changes are connected to major capital investments.

In November 1982 a plan for including a fifth subprogam in the program for developing new, advanced types of motor vehicles, calling for assimilation of diesel engines for passenger cars based on standardized assemblies and parts.

Here we have in mind the standardization of fuel systems, gear belts, heater plugs, devices for starting a cold engine, turbosuperchargers, fuel, oil and air filters, pistons, rings and pins and head gaskets.

Development of equipment under this subprogram is to be accomplished by 1985. This will make it possible to start assimilating in production passenger-car diesels in the PRB, GDR, PPR, SRR and USSR.

At the 89th meeting, the CEMA Standing Committee for cooperation in the field of machine building approved the draft protocol on adding a fifth subprogram to the 1981 Agreement on Multilateral Scientific and Technical Cooperation of CEMA Member-Countries and the SFRY and recommended it be signed at one of the Section 7 meetings. Moreover, the committee instructed the section to draft the organizational framework of CEMA member-country cooperation in developing a standardized model line of diesel engines for passenger cars.

The fact that at present the yearly output of passenger cars in the CEMA member-countries and the SFRY is over two million indicates the importance of this task. Even if this figure does not increase and remains at the same level, taking into account that 10-20 percent of these vehicles will be equipped with diesel engines after 1990, the yearly demand for them will be 200-400,000. This number is so great that consideration should be given (after completing development of a standardized line of small diesel engines) to the possibility of assembling all of them at one plant on the basis of shipments under sub-contracting arrangements of the CEMA member-countries. Such a plant could be built in one of the member-countries, using International Investment Bank credit. This idea is so attractive that, in our opinion, it warrants consideration in the appropriate agencies of all interested CEMA member-countries. Actually, the demands for these engines might be considerably higher since their modifications can also be used in small tractors, ships, refrigeration units and as stationary units.

12567
CSO: 1829/178

BRIEFS

MINSK-BREST FREEWAY OPENS--A new freeway connecting Minsk with Brest has opened fully for regular transport traffic. The Moscow-Minsk-Brest Freeway is now designated as Number 1 in our country. The Brest-Minsk segment has been completely renovated. A major portion of the new route departs from the former roadway in several areas. Throughout the entire length of the freeway, approximately 370 kilometers, there are no traffic signals or at-grade intersections, and traffic interchanges have been constructed at various levels, and more than 100 bridges and crossovers have been built. The freeway's capacity has been increased through widening the roadway. It is important, too, that the freeway has "detoured" around population centers. The route satisfies all international requirements and its dimensions permit high payload tractor trailer traffic. All facilities for technical servicing of vehicles are available as are driver rest and comfort services. The highway construction workers have begun laying the next segment toward Moscow. [IZVESTIYA special correspondent M. Shimanskiy] [Text] [Moscow IZVESTIYA in Russian 14 Dec 83 p 1] 8851

NEW TROLLEYBUS MODEL--Engels--The Engels Plant imeni M.S. Uritskiy is readying for the series production of the modernized ZIU-684 trolleybus, with prototype testing underway in Moscow. The new vehicle features thyristor-pulse engines instead of rheostat types. This replacement will provide a savings in electrical power requirements of up to 20-25 percent. Through modernization, many subassemblies have been improved. To reduce damage to the contact system, metallic rods have been replaced with glass-reinforced plastic rods. Doors are equipped with more reliable pneumatic actuators. The unitized frame is now suitable for engines of various power ratings. The car interiors are considerably more comfortable. Special seats have been designed for children and elderly passengers. The drivers have not been forgotten either; their compartments have been made more comfortable, and the new vehicle is easier to maneuver. It is estimated that the annual economic effect with production of 2,500 trolleybusses will be approximately 14 million rubles. Series production start-up is proposed beginning with the second half of 1984. [SOTSIALISTICHESKAYA INDUSTRIYA special correspondent V. Lifanov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 1 Jan 84 p 2] 8851

AUTO PRODUCTION MILESTONE--Togliatti--Midway through yesterday's first shift, the eight millionth automobile, a light-color VAZ-2107 rolled off the line at the Volga Auto Plant. Dozens of teams from the body-assembly production operation vied for the right to assemble this vehicle. On the occasion of the production of the jubilee auto, a short meeting was held at which the plant workers received the CPSU Central Committee's report. The jubilee vehicle was assembled considerably sooner than the plan forecast, owing to ahead-of-schedule incorporation of the giant plant's capacities, the daily implementation of advanced equipment and technology, widespread dissemination of the brigade-form of organization and payment for labor, and an effective socialist competition approach. Today, 2,600 autos roll off the Volga Auto Plant's four conveyors every day. Seven of eight models bear the state Mark of Quality. The auto plant collective is now preparing for the production of a new base model, the front-wheel drive VAZ-2108, which will reflect the latest trends in world auto production and the expertise amassed by the Togliatti workers. [SOTSIALISTICHESKAYA INDUSTRIYA special correspondent A. Vorob'yev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 4 Jan 84 p 1] 8851

EIGHT MILLIONTH ZHIGULI--The Volga Auto Plant collective has begun the new year with a significant labor success. The eight millionth Zhiguli automobile was produced on the enterprise's main assembly line. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 84 p 3] 8851

NEW FARM TRUCK--The Ural-5557, with improved cross-country ability, is designed for use by rural workers. Assembly of this vehicle has begun in the main complex for production of agricultural-use vehicles, the first phase of which was accepted at the Ural Auto Plant in Miass, Chelyabinsk Oblast, on the eve of the new year. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 84 p 3] 8851

FARM TRUCK PRODUCTION CAPACITIES--New capacities have been placed in production at the association, "Kutaisi Auto Plant." They are designed for series production of agricultural use trucks, the manufacture of which is provided for by the USSR Food Program. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 84 p 3] 8851

NEW SMOLENSK AUTOPARTS PRODUCTION--New production at the Smolensk Autoparts Plant is to provide transmissions for diesel powered ZIL vehicle makes. The State Commission has certified this unit for introduction into service. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 84 p 3] 8851

NEW TRACTOR-TRAILER UNIT--Belorussian SSR--Products of the Minsk Auto Plant enjoy a widespread reputation not only in our country but abroad as well. The plant collective works continuously to improve vehicle design and quality. The latest innovation for the plant workers is the highway tractor-trailer unit designed to transport containerized freight. Minsk Plant vehicles are improving in reliability and durability. They are now capable of running 400,000 kilometers without major overhaul. The new highway-use MAZ-5432-93971 tractor-trailer, with a capacity of 21 tons, is designed for intercity and international transport. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 84 p 3] 8851

ENGINE PRODUCTION ACHIEVEMENTS--In the latter half of September, number 4,000,000 ZIL-130 and Moskvich-412 engines were built at virtually the same time. This is a great event for the Moscow Auto Plant imeni I.A. Likhachev and the Ufa Motorbuilding Production Association. The ZIL-130 vehicle has been in production for more than 20 years. It has become the base for many modifications of trucks, and the chassis for dump trucks and specialized vehicles. Since the beginning of production, the ZIL-130 design had undergone continuous improvement. Capacity of the vehicle has increased, and its engine and other subassemblies have grown more reliable. Now ZIL is preparing for the production of a new vehicle model with a diesel engine which will be more powerful and economical than a carburetor-equipped engine. The Moskvich-412 engine has become more reliable also; its service life has been increased to 140,000 kilometers. As the result of continuous upgrades in production, the fourth million of these engines was assembled in about one-fourth the time required to assemble the first million. [Text] [Moscow AVTOMOBIL'NYY TRANSPORT in Russian No 12, Dec 83 p 13 [COPYRIGHT: Izdatel'stvo "Transport," "Avtomobil'nyy transport" 1983] 8851

CSO: 1829/146

SPECIFICATIONS OF 'MUD'YUG' MULTIPURPOSE ICEBREAKER

Moscow MORSKOY FLOT in Russian No 10, Oct 83 pp 41-44

[Article by: I. Minut, chief designer of the Leningrad TsPKB [Central Planning and Design Bureau] A. Peschanskiy (deceased), senior engineer of V/O [All-Union Association] Mortekhsudoremprom [Maritime Technical Ship Repair Industry?]; and V. Khudin, head of a department of the Leningrad TsPKB: "New Reinforcement for the Fleet" under the heading: "Fleet Equipment".]

[Text] At the end of 1982, the multipurpose icebreaker "Mud'yug" entered into the fleet of the Northern Steamship Company. It has shallow draft and is intended for servicing ships on the approaches to ports in freezing but not Arctic seas, for rescue work in icy conditions, and for towing ships and floating equipment in clear water.

"Mud'yug" was built by the Finnish Wartsila shipyard in Helsinki and is the first of a series of three icebreakers. It has diesel power with reduction gears and two controllable pitch propellers. It has a single deck with an elongated forecastle and double sides with excess freeboard.

The capacity of the fuel tanks at a draft of 6.5 meters is about 2,400 m^3 and of the fresh water tanks, about 100 m^3. The ship's endurance based on fuel and fresh water and with the power plant operating at 7.35 MW and with a draft of 6.0 m is 20 days. At 6.5-m draft, it is 30 days.

The icebreaker's speed over a measured mile at 6-meter draft and with a power of 9.1 MW on the propeller shafts is 17.4 knots. The bollard pull with a power of 7.0 MW on the shafts is 917 kN.

The radius of the turning circle of the icebreaker at maximum speed ahead is 0.13 miles. During a reversal from full ahead to full astern in clear water, the propeller blades were at the zero position at the end of 4 seconds, the engines had gathered full power at the end of 8 seconds, and the propeller blades were in the full astern position at the end of 29.5 seconds.

The icebreaker was built to the USSR Register of Shipping classification: KM ⊛ 1 A2 (icebreaker). Its area of navigation is unrestricted. It can operate in air temperatures from -40 to +35 C, and in water temperatures from -2 to +27 C.

Principal Characteristics

Length: overall	92.00 m
" on designed waterline	78.51 m
Beam: overall	21.38 m
" on designed waterline	20.05 m
Height of side to main deck	10.50 m
Draft: to designed waterline	6.00 m
" in dry-docking with minimum fuel etc.	5.41 m
Deadweight	10.10 m [sic!]
Power:	
Maximum continuous shaft power in clear water	9.1 MW
" short-time power working in ice	9.1 MW
Continuous shaft power working in ice	7.0 MW

The icebreaker, generally speaking, is unsinkable when one compartment is flooded, but it also is unsinkable when two compartments in the bow or stern extremities of the hull are flooded. The hull is divided by six transverse bulkheads which are watertight to the main deck.

The ship is built according to a longitudinal framing system with intermediate web frames. The double bottom is made in the form of a platform and the floors have 800 mm spacing. In the region of the icebreaking belt there are longitudinal stiffeners with 400 mm spacing. The underwater part of the outer shell in the icebreaking belt is made of a shipbuilding steel having increased strength.

The ship's anchoring and mooring gear consists of two bow electrical anchoring and mooring capstans with a pulling force of 117 kN, and a stern electromechanical, three-speed, capstan with a pulling force of 50 kN.

In addition, on the upper deck a two-drum "Norwinch" towing winch is installed having a pulling force of 250 kN with a take-up drum capacity of 1,000 meters of 62 mm rope.

The icebreaker has two semibalanced rudders each with 6 m^2 area. The rudder blade can be removed without removing the rudder stock. The Wartsila DS 250/350 electrohydraulic steering engine has a rated turning moment of 250 kN·m.

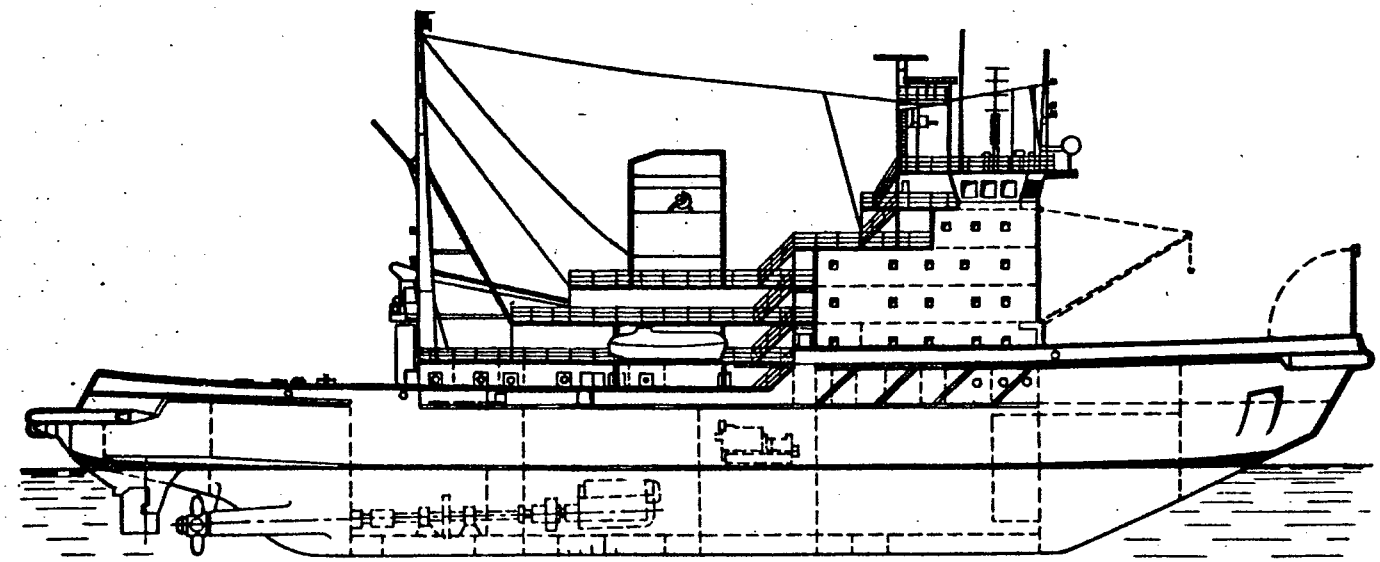
At the after end of the forecastle deck an electromechanical deck crane is installed having a lifting capacity of 30 kN and a boom outreach of from 4 to 14 meters. The crane has a heated cabin of the closed type.

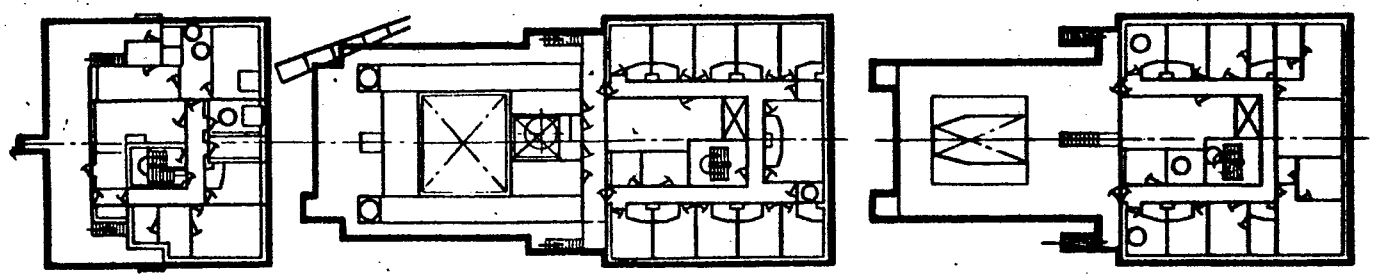
The icebreaker has two, closed-type, fiberglass motor lifeboats each with a capacity of 55 persons.

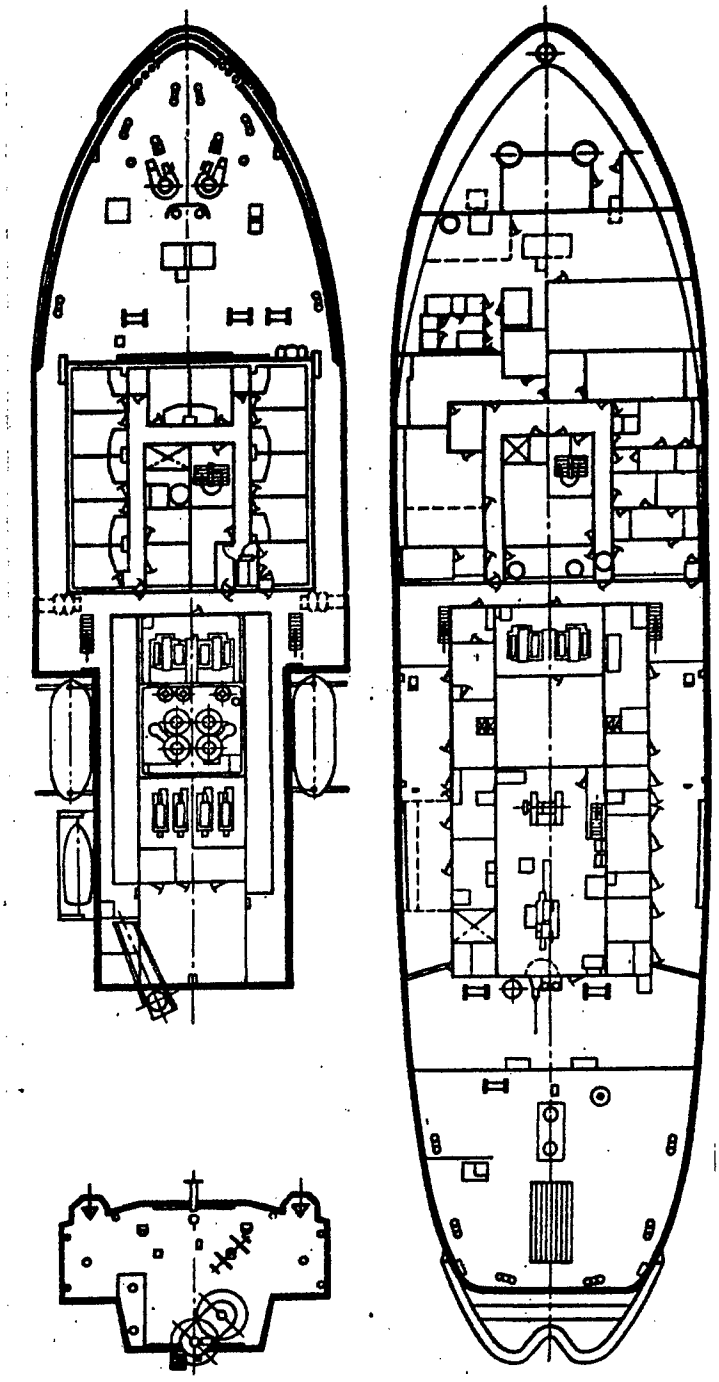
The outer shell is painted with "Inerta-160" ice-resistant paint to a height of about 7 meters above the base line.

For the accomodation of the crew there are 5 cabin suites having a study and a sleeping room, and 27 single-berth cabins. All cabins have private sanitary facilities with a shower, and two of the suites have a bath. In addition, the icebreaker has 11 spare berths (pullman bunks) and a pilot's cabin.

General Arrangement of Ship







The ship has the necessary public and domestic spaces; namely, a ward room, crew's mess, lounges for officers and crew, a dispensary, a Finnish bath, an exercise room, and others.

For protecting the environment from pollution the icebreaker has a treatment system for sewage and waste water, a "Fram"-type bilge water separator and a Golar Metal Inc. type of incinerator for oil and solid wastes.

For the first time on domestic icebreakers the main power plant consists of four, medium-speed Wartsila type 8R32 diesels. These are four-cycle, eight-cylinder, trunk-type engines with gas turbine supercharging which work in pairs through Lomann and Stolterfoht summing reduction gears and "Pneumo-flex" disconnecting clutches,made by the same firm, to drive two KaMeWa VRSh [controllable pitch propellers]. Fuel consumption at 100 percent power is 213 kW·hr [sic - grams per kW·hr intended?].

The use of a diesel and reduction gear propulsion plant instead of a diesel electric plant permits reducing the length of the icebreaker, reduces its construction cost and the weight of the power plant without a noticeable deterioration in maneuverability.

The type 8R32 engine is a new development of the Wartsila Diesel company. The company conducted research work to select the optimum characteristics for an engine intended for operation on an icebreaker under the conditions of rapid drop-off and take-up of loadings and also for the capability to operate for prolonged periods at low loadings. The indicated requirements led to the development of an engine with two-impulse supercharging. As the tests on a stand and on the underway trials of the icebreaker showed, such a system of turbosupercharging led to elevated temperatures in the exhaust outlets at cylinders No. 7 and 8 as compared with the 160-180 C temperatures at the exhaust outlets of the other cylinders. With this, however, elevated thermal stress levels were not observed for the parts of the piston and cylinder assembly. A system for cooling the pistons with oil under pressure is used. The oil is fed into the annular groove under the lower oil-removal ring. The engine is adapted to operate on medium viscosity fuel having a viscosity of 300 seconds Redwood 1 at 100 F. The company has conducted tests confirming the possibility of operating these engines on fuel with a viscosity of 2000 seconds Redwood 1 at 100 F.

Unlike the usual diesel and reduction gear plant, on the icebreaker, additional pumps have been provided in the hydraulic system for the controllable pitch propeller to accelerate the movement of the propeller blades. Also provided is a 3-meter diameter, 11.5 ton ice flywheel on the propeller shaft, and a shaft turning machine on the reduction gear for freeing a jammed propeller when the engines are disconnected from the reduction gear.

The propeller shafts have Waukesha shaft seals and turn in oil lubricated stern tube bearings. Provision has been made to extract the propeller shafts out through the stern and for that reason they are connected to the intermediate shafts by couplings.

The auxiliary electrical plant provides all shipboard electric power requirements in any operating condition. It consists of three synchronous three-phase generators of the Stromberg HSPTL 11/554 type having a power of 1,000 kV·A at 400V and 50 Hz with a power factor of 0.8 . They are self ventilated with electrostatic filters. Steaming in clear water is provided for by the operation of one diesel generator. Steaming in all icy conditions,but without operating the towing winch or heeling system, is provided for by two diesel generators.

The generators are driven by Wartsila type 624 TS diesel engines with a continuous power of 809 kW at 750 rpm. They are adapted to operate on fuel of viscosity up to 300 seconds Redwood 1 at 100 F. Three transformers, each of 100 kV·A capacity, are provided to supply 220 V current.

The auxiliary electrical plant's control system was made to the A1 class of the USSR Register of Shipping.

One emergency diesel generator of domestic manufacture is installed on the icebreaker. It is a type DGFA 100/1500R consisting of a 6Ch 15/18 diesel with 100 kW of power at 1500 rpm and a type MSSF 92-4 generator having a power of 100 kV·A at 400 V and 50 Hz with a power factor of 0.8.

A battery is installed to provide emergency lighting for 30 minutes. For receiving shore power, two 200 A panels are provided and two cable reels each for 100 meters of 4X70 mm cable. Two 12- and 24-volt low voltage supply lines and one 36-volt supply line for a portable instrument are provided.

The boiler plant consists of two domestic type KAV 2.5/5 boiler units having an output of 2500 kg of steam per hour at a pressure of 5.5-7.5 bars and two Sunrod waste-heat boilers (each having two sections) each with an output of 1500 kg of steam per hour with the main engines at 100 percent loading. The possibility is provided for the parallel operation of the waste-heat and auxiliary boilers.

To improve the icebreaker's penetration of snow-covered ice, the Wartsila pneumatic washing system has been provided. The system is served by four electrically driven type GMD 16G13 rotary compressors manufactured by the Piller Company. The power of the compressor is 200 kW at 1485 rpm. Each compressor supplies the pneumatic washing system with about 2 m^3 of air per second against a 6.6 m head of water.

The automation system for the ship's power plant permits control of it from the bridge according to a combinational program. The system also provides:

for separate remote control of main engine rpm and the thrust of the propellers for the central control station (TsPU),

for emergency control from local stations (at the main engine and at the oil distribution box for the VRSh), and

for emergency push-button control of propeller pitch from the bridge.

The electrical remote control system from the bridge (the combiner) consists of an electrohydraulic regulator for changing propeller pitch and an electropneumatic transducer for converting an electrical signal for controlling main engine rpm into a pneumatic one actuating a Woodward governor. The electronic system for monitoring main engine loading is a component part of the remote control. It consists of a unit for limiting the loading and a unit for distributing the loading. The unit for limiting the loading holds it within given limits by accurately adjusting propeller pitch. The system for distributing the load between the two main engines driving one propeller has an automatic control or a manual control from the TsPU.

During a transition into the program for operating in ice, the following things are done automatically:

the output of the fuel pumps is reduced to 81 percent of rated output,
the engines are set to run at a constant speed,
the maximum pitch of the propellers is limited to 80 percent of full pitch, and
the "unloaded" and "booster" pumps for the hydraulics are started.

The problem in the program for operation in ice is to hold the main engine power (the fuel rack) and the rpm of the propeller shaft at the ordered value. During jamming of a propeller, the fuel rack initially is automatically moved to increase power up to maximum. If this does not free the propeller, a reduction in its rate of rotation takes place. When the propeller speed drops below 80 percent of the ordered value, the propeller pitch is immediately reduced to 20 percent of the value corresponding to the condition "full ahead".

The ballast, fuel, and drainage piping systems have remote electropneumatic control from an apparatus room. For measuring the liquid level in tanks the Kontram Company's "Tanklevel" instruments are installed. The compressors for the pneumatic washing system are started and stopped both from local stations and from a panel in the pilot house. From that same panel, the group of valves in the pneumatic washing system are controlled. From a panel in the pilot house, manual or automatic control (for a given heel angle) is provided for two propeller type heeling pumps each delivering 3600 m^3 per hour with hydraulic control of the blade settings. The period of roll to the maximum angles of heel is about 90 seconds.

The NK-3 diagnostic system of the Autronica company is installed on the ship. The operation of the main and auxiliary installations is monitored by the Stromberg company's "Sako" emergency and preventive signalling system. The number of monitoring channels is over 300. The accuracy of measurement in the emergency and preventive signalling system is ± 2 percent of full scale.

The systems for control and monitoring are concentrated in the control console in the TsPU. The main electrical distribution panel and the panel for control of fuel, ballast, and drainage systems are situated in a neighboring space - the apparatus room.

The icebreaker is fitted with the latest domestic electronic and radio navigation and communications equipment.

MARITIME AND RIVER FLEETS

LIGHTER BUILDING AT KILIYA SHIP REPAIR YARD

Moscow VODNYY TRANSPORT in Russian 29 Dec 83 p 3

[Report by staff correspondents D. Romanov and A. Bondareva: "Lighters Are Built Here"]

[Text] We are walking in the territory of the Kiliya Ship Repair Yard and talking unhurriedly with its director V. Shuleba.

"Here!" he says with pride. "The lighters are built here."

Almost 5 years have passed since that day when this specialized shop began operations, and specialists who speak of it often use resounding epithets.

As soon as the barge with rolled metal moors alongside the berth, which was built especially for this purpose, a crane immediately conveys the metal directly to the shop. Here it is cleaned of rust, painted and dried. The gas-cutting machine tool, which is controlled by an electronic computer, makes it possible to obtain components that are finished with a precision of up to a 10th fraction of mm. All operations--from the barge to the machine tool--are performed without manual labor.

"More than 300 units are needed for one lighter," shop chief A. Karanyaga describes. "Each is characterized by high precision. This is why we strive to train highly skilled specialists who are able to work with most complex equipment."

Yes, one cannot do much here without knowing modern technology. For example, the automatic set for welding ribs on flat sections. The Kiliya Ship Repair Yard [SRZ] is the third in the country to own such a set. Its mastering was entrusted to P. Karanyaga, veteran and brigade leader of ship assembly workers. He in turn trained many young workers in superior work.

There is a high level of welding work in the shop. Automatic and semiautomatic welding is used in building berth assembly, and even a nonspecialist can see that the quality of the welds turns out to be exceptional.

The high degree of automation and mechanization of lighter production and the use of modern production processes enable the Kiliya ship repair workers to turn out "floating containers" of high quality.

"We are now building lighters in such a way as if we have been doing this all our life," A. Karanyaga continued, "but there were many difficulties at first..."

There were many indeed. There are no similar shops in domestic shipbuilding even now. It was necessary to master new equipment, to train people how to use it and to strive for maximum coordination of all subdivisions. A lighter is born in flow production. A slightest error, a hitch would upset the planned periods. But the most important it was necessary to turn out the traditional production at the same time. Incidentally, the first lighter was assembled in 4 months, and no one thought that it was too long at that time.

This is all history today. A regular "floating container," which is in no way inferior to foreign models, leaves the yard. The possibilities for reducing the periods in building lighters have not been completely exhausted.

During the years of shop operation, tens of interesting innovations were submitted and introduced and many thousands or rubles were saved. I. Blashchuk, chief of the technological group, changed the design of the lighter's side fastening, welding engineer A. Bodyagin improved the mount of the semiautomatic welding unit and engineers S. Ivonin, S. Kucherenko and Yu. Duma recommended their own design of the hatch cover for lighters... Every recommendation is an increase in labor productivity, a reduction of metal content and an improvement in the operational qualities of lighters.

Almost 3 years ago, the Kiliya Ship Repair Yard has adopted a complex system of control over production quality. It linked all yard services and ensured their work toward the final result. Special standards of the enterprise regulate the actions of the complex system of control over production quality [KSUKP]. In 1983, the mark of quality was awarded to the Kiliya lighter.

"We, of course, value the recognition which was gained by our production," yard director V. Shuleba said. "But it is not enough just to receive the mark of quality... That is why we continue improving production, training personnel and utilizing the latest scientific and technical achievements."

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CSO: 1829/188

CAPABILITIES OF 'MUSSON', 'BRIG' SHIPBOARD COMMO EQUIPMENT

Leningrad LENINGRADSKAYA PRAVDA in Russian 11 Jan 84 p 2

[Article by V. Kulagin: "Storms Are Not Frightening with a 'Musson'"]

> [Text] Today, the cargo motorship "Akademik Filatov" left on this year's first transatlantic voyage for the coast of distant Cuba. The seamen can confidently talk with the motherland while being thousands of miles away from their port: the vessel is equipped with new domestic radio equipment, which was developed by the collective of scientists of the Department of Radio Transmitting Devices of the Leningrad Electrical Engineering Institute imeni V. I. Lenin [LETI] jointly with production workers of some enterprises. Last year, a group of specialists, who have ensured the development, organization of production and reequipment of the national fleet with efficient radio transmitting equipment, were awarded the USSR state prize for science and technology.

"Akademik Filatov" was loading at a berth. From the deck one could see how the leaden waves of the Gulf of Finland were driving the ice floes. The Baltic was stormy, and even here, at the wall of the berth, one could feel its harsh breath. How is it in the open sea?

It is not that easy for the seamen, but ocean is their place of work. To reduce the time at sea is, of course, alluring, and especially advantageous from the economic standpoint. A day of underway time of a vessel such as the "Akademik Filatov" costs R4,000. Reliable and efficient radio communication--the only means for controlling vessels and transmitting information--can help in many ways to reduce the length of a voyage.

We are having a talk in a spacious and comfortable radio office. A wind is raging beyond the portholes, but here it is quiet and comfortable.

"It used to be a diffcult task to get in touch with the mainland in such bad weather. Many causes influence the passage of radio waves: the time of the day, the geographic location of the vessel and atmospheric conditions, including weather," said captain A. T. Sheblyko. "It is quite different now. Every captain has the possibility of getting in touch with a dispatcher at any time and not wait for several hours like in the past."

What does this mean in practice? Having the necessary operational information on weather and service information, it is possible to chart an optimum course, avoid a hurricane and calculate time exactly so as to be ready for unloading at the designated hour and place, and this means saving both time and means.

The matter does not concern the weather alone. The number of ships in the world increases every year and the volume of transmitted information grows, so also does the mutual radio interference, and the tasks of navigation and controlling the fleet become complicated. That is why the country's science and industry were set a task of great importance--to reequip the fleet with efficient radio equipment.

"We did receive such transmitters," said radio station chief G. A. Bogdanov in demonstrating them--the Musson and Brig. "Formerly several minutes were needed for retuning the radio equipment, but now a maximum of 10 seconds are used for changing, for example, from one band to another and tuning to any frequency. It used to be that after twirling the tuning knobs on an 8-hour watch one would be quite worn out. With a Musson it is enough to press a key to be ready to work on a required fixed wavelength. Moreover, the new transmitters are four times as powerful, and the strong signal does not "drown" in atmospheric interference..."

There are also other merits in Musson and Brig: they ensure uninterrupted teletype and radio telephone operation of which the seamen did not even dream of before. A voluminous text can be received and especially transmitted--without errors--much more easily and reliably by teletype, which, you know, just pounds away by itself. A radio operator already works without that pressure, for example, such as with a key in the past: he can prepare for a communication session ahead of time, without haste by "stuffing" information on a perforated tape. Every crew member may place an order for a conversation with his family by radio telephone practically at any moment.

"In brief, it is difficult to overrate the merits of this equipment," the captain concluded. "Many thanks to its developers!"

Musson, Brig and Korvet--three types instead of the former 20--are serving reliably today on ships of the maritime, merchant and passenger fleet. Each one of them carries a pentagon mark of quality. As regards technical characteristics, the transmitters are equal to the best world models and exceed their foreign counterparts in many indicators. This has made it possible to completely stop purchases of imported equipment. On the contrary, we are now supplying our transmitters to 27 countries in the world.

Today, the country's fleet is completely reequipped with modern radio equipment. An important national economic task was solved and a major contribution was made to scientific and technical progress and the development of radio engineering.

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MARITIME AND RIVER FLEETS

IMPROVED PADDLE-WHEEL STEAMERS FOR SHALLOW RIVER USE

Moscow VODNYY TRANSPORT in Russian 24 Jan 84 p 4

[Article by V. Fedorov: "Vessels in the Style of 'Retro'"]

[Text] Five years ago, paddle-wheel steamers began to be launched again from the building slips of the Zhatay Shipyard, which is near Yakutsk. The vessels in the style of "retro" with a convoy of three-four barges sailed in most shallow water in the upper reaches of the Amga, Aldan, Vilyuy, Vitim and Olekma, where the sound of a steamer whistle was never heard before.

"Ivan Dmitriyev, chief engineer of the Lena Joint River Steamship Company, initiated the revival of paddle-wheel steamers on our rivers," said Aleksandr Basov, chief of the steamship company's design buro. "He drew attention to the fact that a vessel with a propulsive device of such type is by far more suitable for shallow water--at depth of about 1 m. The wheels located on the sides of the steamer do not force water from under the hull as is the case with spiral and water-jet propellers. As a result, there is no subsiding of the vessel and of its so-called "suction" to the bottom, even if there are only a dozen centimeters under the keel."

Dmitriyev defined for wheel steamers a zone of small shallow rivers, which are so widespread in the north of Siberia. In the territory of Yakutia alone there are more than 450,000 rivers with an overall length of over 1.5 million km, among which only several dozen are large.

The design of the new steamer was already completed back in 1976. The vessel differed considerably from its predecessors. Living and service facilities were note located on the overhangs of paddle wheels, but were designed in the form of a two-level superstructure which made it possible to raise the wheelhouse considerably and to improve the field of view. The propulsion system uses two 300-horsepower engines, which are installed independently across the hull. Along with an increase in total capacity, this also provided the steamer with amazing maneuverability: in rotating wheels in various directions, it could swing around practically in one place. Conditions of labor and rest of the crew differ from the former ones.

The tests of the first wheel steamer "Mekhanik Korayennikov," which was launched from the building slip of the Zhatay Shipyard in 1978, confirmed its viability.

It turned out that traction indicators were 15-20 percent higher than in the spiral vessels. Having a 1-m draft, it moved in a depth of 105 cm without losing power. Shortcomings were also uncovered during the tests: a slightly increased draft compared with the estimated one resulted in a change of the angle of immersion of wheels and deterioration of their work conditions, the vibration of the hull was also considerable. Certain changes were made in the design. The length of the hull was increased by 2.4 m. It reached 43.2 m with a width of 8 m. The draft was somewhat reduced. In addition to installing the main engines on shock absorbers between living cabins in the hold and the engine room, an anti-vibration belt was installed to eliminate vibration and noise. A wave rectifying device increased the efficiency of paddle wheel operation. The speed of free wheeling was brought to 17.5 km per hour. It in this form that the cargo paddle-wheel steamer was commissioned in the series.

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DETAILS OF NEW KHERSON-BUILT TANKER 'DMITRIY MEDVEDEV'

Moscow MORSKOY FLOT in Russian No 1, Jan 84 pp 42-46

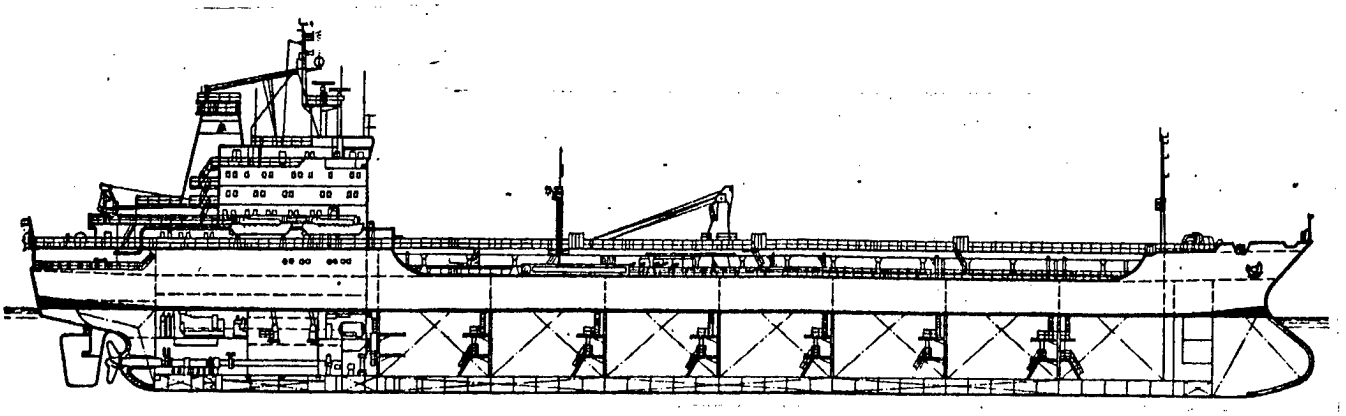
[Article by L. Dvorovenko, chief of the Technical Department of the Latvian Steamship Company: "The Tanker 'Dmitriy Medvedev'"]

[Text] In 1983, the composition of the Latvian Steamship Company's tanker fleet was reinforced by the tanker "Dmitriy Medvedev"--a leading vessel in the series of tankers, which was built at the Kherson Shipyard. The vessel is intended for simultaneous transportation of four grades of oil and oil products. The tanker "Dmitriy Medvedev" is a single-screw motorship with double sides and double bottom, a bulb form of the bow end, transom stern, forecastle and stern location of the engine and cargo pumping sections and living and service facilities.

The vessel was built according to the rules and under observation of the USSR Registry of Shipping to class KM ⊛ LZ [1] A2 (tanker) and meets the requirements of international rules and convetions. The navigation region is unlimited.

The vessel's hull is made of low-alloy and carbon steel. Framing is done according to a composite system. The weather deck, the sides, the bottom and the inner bottom under cargo tanks are made according to a longitudinal composition system, but the deck, the sides and the bottom at the ends, the sides in the area of the icebelt, the double bottom and the platforms in the engine section according to the transverse system.

The vessel's tank part is divided in length by tight bulkheads into 14 cargo tanks and the side and between bottom parts into 8 ballast and 2 settling tanks. The capacity of the cargo tanks is 30,550 m^3 and of the ballast and settling tanks 11,207 m^3. The tanker's cargo system was executed according to the linear scheme in the form of individual piping for each of the four groups of tanks, which are tended by their own cargo pumps with a feed of 700 m^3 per hour and a pressure of 0.7 megapascals. The 12 DN-7AM cargo pumps are centrifugal horizontal ones driven by electric motors, which are installed in the engine room. Provisions are made for work interchangeability of pumps tending groups I and II tanks as well as those in groups III and IV. The cargo system's pipes are seamless steel ones of increased D_y-350 mm thickness. The stopping accessories installed in the system include valves, clinket gates and Hercul butterfly valves with hydraulic and manually operated drives.



Basic Characteristicc of the Vessel

Length:	
greatest	178.86 m
between perpendiculars	165.00 m
Greatest width	25.30 m
Height of the side	15.00 m
Draft:	
with full load	10.40 m
to summer load mark	11.00 m
Full load displacement	38,290 t
Deadweight	26,430 t
Registered tonnage:	
gross	18,380 register t
net	7,440 register t
Main engine capacity	7.8 megawatts (10,600 horsepower)
Speed with load	15.1 knots
Cruising range	12,000 mi

The cargo system provides for enclosed receiving of cargo by non-vessel means with an intensiveness of up to 5,000 m^3 per hour. For the removal of gases from cargo tanks during enclosed loading, each tank is equipped with a self-contained gas bleeder device which ensures gas outlet at a speed of 30-40 m per second. Remote and local control of cargo level in tanks is carried out by level gauges of the (Enraf Nonius) firm. The cleanout of cargo residue in tanks and cargo piping is carried out by 2 PDV-160/16S upright steam piston pumps with a feed of 160 m^3 per hour and a pressure of 1.6 megapascals.

For the purpose of ensuring the requirements of the International Convention on the Prevention of Sea Pollution from Vessels (MARPOL-73/78), the forepeak and the tanks between the sides and the bottoms, which are intended for isolated ballast, are served by an individual ballast system. The system includes 2 electrically driven upright centrifugal pumps with a feed of 850 m^3 per hour and a pressure of 0.18 megapascals. A VEZh-160 water-jet ejector with a feed of 160 m^3 per hour and a pressure of 0.1 megapascals is used as a cleanout means. The ballast pumps and the ejector are located in the engine room.

The cargo cleanout and ballast operations on the vessel are automated. Remote control and control over operations of the cargo, ballast and cleanout systems are carried out from the cargo operations control post (PUGO), which is located on the boat deck. Concentrated at the cargo operations post are panels to control cargo pumps with push buttons for shutting them down in an emergency and to control electric drives of ballast pumps, mimic panels with push buttons to contol and signal the condition of butterfly valves in the systems and instruments to control the temperature and the level of cargo in tanks, to signal the discharge and suction under pressure of cargo and cleanout pumps and the maximum upper and lower levels in cargo and ballast tanks.

The vessel is equipped with a stationary system for washing cargo tanks with crude oil and cold and hot water with detergents. Under deck and finishing washers are installed permanently in every tank. Provisions are made for washing settling tanks with portable washers.

Two settling side tanks with a capacity of 441 m^3 each are connected to each other by an overflow pipe, forming a two-stage washing water sedimentation system. Two PZV-21 heaters with a productivity of 100 m^3 per hour each under a heating temperature of 80°C are connected to the system to heat washing water. The washing system uses cargo and cleanout pumps and the VEZh-250 ejector. Provision is made to control concentration of oil products in the washing water that is discharged.

In accordance with the requirements as regards prevention of sea pollution, the vessel, in addition to the 2 settling side tanks, also has 3 tanks to collect oil-containing water with a capacity of 31.5, 43.5 and 69.9 m^3 respectively. To cleanse bilge water an SK10-M separator of the coalescent type is installed in the engine room. It ensures a high degree of cleansing: less than 100 part of oil per 1 million parts of mixture.

A system is provided for automatic control and registration of oil content and control over overboard dischrage of water cleansed by the separator with light and audio signalling at the central control post (TsPU), the cargo operations control post and the wheelhouse.

An OS-400 type incinerator of the Golar firm is installed on the vessel for burning garbage and fuel and oil separation waste.

The vessel's fire protection is ensured by systems of inert gases (SIG), water extinguishing, steam extinguishing and carbon dioxide and volumteric chemical extinguishing.

The system of inert gases uses flue gases of the KAV 6.3/16 boiler units after a two-stage cooling and cleaning them of hard particles and sulfuric compounds. The system includes 2 successively connected cleaning and cooling devices and 2 electrically driven NTsV 250/30A-11 centrifugal sea water pumps with a feed of 250 m^3 per hour and a pressure of 0.3 megapascals (one of which is a reserve pump).

As an additional safeguard which prevents a reverse flow of gas from tanks, a hydraulic seal-separator is installed in the system. The inert gases are fed by 2 centrifugal gas blowers of the TG-60-1.3 type with a feed of 4,000 m^3 per hour and a pressure of 275 (kPA) (one of which is a reserve blower). The inert gast which is fed to tanks contains no more than 5 percent of oxygen in volume. The control of the inert gas installation is automated with the aid of a Viktoriya-M-03 system, which ensures remote and automatic control of mechanisms and accessories of the systems of inert gases and control of gas and cooling water temperature and warning and alarm signalling.

The water extinguishing system includes 2 NTsV 220/100 centrifugal electric pumps with a feed of 220 m^3 per hour and a pressure of 1 megapascal and one NTsV 63/100 emergency centrifugal electric pump with a feed of 63 m^3 per hour, which is installed in the forward pump section. The NTsV 220/100 pumps are started and stopped from the cargo operations control post, the central control post and the office. The emergency pump can be started from the weather deck.

The steam extinguishing system ensures protection of the waste-heat boiler, spark arresters, flues of boilers, mufflers of auxiliary engines and fuel supply containers.

The vessel's basic fire protection system--a system of extinguishing with foam of average ratio with the aid of GSP-600 portable foam generators or PLS-40 stationary guns. The system is served by one station which is located on the weather deck. The system can be put into operation by remote control from the central control post, the cargo operations control post and the office.

The carbon dioxide extinguishing system is provided for extinguishing fire in the scavenging air receiver of the main engine and in the facilities of the paint store, the emergency diesel generator and the inert gas system.

A volumetric chemical extinguishing system, which consists of a station and distributing piping with sprayers, is provided for extinguishing fire in the machinery and boiler section. The refrigerant-114V2 is used as a fire extinguishing agent.

The vessel's main engine is a 6-cylinder, two-stroke, reversing and cross-head turbocharged 6DKRN 74/160-3 type diesel with a built in thrust bearing and a continuous operating power of 7.8 megawatts (10,600 horsepower) with a rotational speed of 120 RPM. The diesel was made at the Bryansk Machine Building Plant under license of the (Burmeister and Vine) firm.

The fuel preparation system ensures engine operation on all grades of liquid fuel of viscosity up to 3,500 c and 100°F. The fuel viscosity within the set limits is maintained automatically by a VISC-21P viscosity regulator of the Eurocontrol firm. The engine is equipped with a remote control system from the central control post and a Grom remote automated control system from the wheelhouse.

The systems of remote control and means of automation ensure duty watch-free servicing of the main engine, which works a four-blade fixed-pitch screw of

5.5 m diameter. The deadwood gear of the tail shaft includes two grey cast iron bearings with babbitting, working on oil lubrication, and US 670 Simplex brand stuffing box seals.

The vessel's power station consists of 3 DGR 2A 500/500 alternating current generators of 500 kilowatt (400 volt, 50 Hz) capacity and one TGU 500 type utilization turbogenerator of same capacity with drive from an active type turbine via a single-reduction gear. Installed as a generator drive are 8ChN 25/34-3 brand four-stroke, trunk-piston, single-acting and nonreversible engines with a turbochage of 534 kilowatt (727 horsepower) capacity each and a rotational speed of 500 RPM. An ADGR 200/1500 emergency diesel generator of 200 kilowatt capacity with drive from a 12 Ch 15/18 (1D 12V-300K) brand engine of 221 kilowatt (300 horsepower) capacity is installed in a special room on the boat deck. During disconnection of the main distribution board (GRShch), the emergency diesel generator is started from storage batteries. Auxiliary engines operate on diesel fuel.

Provision is made for a unified system of cooling the main and auxiliary engines with fresh water and the possibility of using the heat of the cooling water in warming up the reserve diesel. Diesel generators are equipped with remote automated control from the central control post.

The vessel's requirements in steam are ensured by 2 automated boiler units of the KAV 6.3/16 type with a steam productivity of 6,300 kg per hour each and a steam pressure of 1.6 megapascals and a waste-heat boiler of the KUP 660/7-1 type with a steam productivity of 5,000 kg per hour and a pressure of 0.7 megapascals. Providing consumers of steam during most heavy duty conditions (warming up cargo to 60°C in 48 hours, washing tanks) is done by operating the two boiler units and the waste-heat boiler. During other conditions, provision is made for operating boiler units separately by groups of consumers and for providing steam to any consumer during operation of one boiler unit. Devices for automatic operating schedule control of boiler units and the waste-heat boiler ensure their servicing without having a constant duty watch.

Replenishment of boiler and washing water is ensured by a D5U automatic water distilling installation with a daily productivity of 20-25 t. The installation uses secondary fresh water heat in the closed circuit of the main engine cooling system as a heating medium.

The compressed air system, which serves the vessel's power plant, includes 2 automated starting air electric compressors of the EKP-280/25 type with a feed of 280 m^3 per hour each and a pressure of 2.45 megapascals and one automated electric compressor of the EKP-210/25 type with a feed of 210 m^3. The household needs in compressed air are ensured by an electric compressor of the EK-16/11 type with a feed of 160 m^3 per hour and a pressure of 0.8 megapascals.

The refrigerating installation, which serves a block of provisions compartments to maintain designed temperatures for storing food products, consists

of 3 uniform compressor-condensate sets of the MAK 6RB/11 type with a refrigerating capacity of 6,200 kilocalories per hour. The installation's operating schedule is automatically controlled. Remote control of temperature in the compartments is read-out in the central control post.

The living and service facilities are equipped with a 2-channel air conditioning system with individual regulation of temperature in every room. The system is served by 3 automated air conditioners of the Briz-56 type with a productivity of 5,600 m^3 per hour each and 3 compressor-condensate sets of the MAK 40 RE/11 type with a refrigerating capacity of 41,000 kilocalories per hour each. A self-contained air conditioner of the KKh-40/10 type with a productivity of 4,000 m^3 per hour and a set of the MAK 30 RE/11 type with a refrigerating capacity of 29,000 kilocalories per hour are installed for the central control post and workshops of the engine room. Control of the work of the refrigerating plant of the air conditioning system is automated.

The steering gear consists of a semisuspended and semibalanced streamline shaped 26 m^2 rudder, which is controlled by a 4-cylinder steering engine of the R18M1 type with a nominal torque of 630 kilonewtons. m. The time of putting the rudder from 35° on one side to 30° on the other at full forward motion with operation of one steering engine pump is no more than 28 seconds. Provision is made for automatic control of the steering engine by means of a steering gear of the Aist 1-10 type. Indicators for putting the rudder over are installed in the wheelhouse, on the wings of the navigating bridge, in the central control post and in the steering room.

The machine workshop, which is located in the engine room, has a screw-cutting lathe, two drilling machines, a universal milling machine, grinders and other machines as well as other equipment needed for repair work, including an overhead monorail conveyer with a hand hoist. A workshop is equipped for repair and testing of engine fuel-feed equipment. There is also a welding post.

The central control post, which is located on the platform of the engine room, has a complex of universal systems for handling and control of technical means of a "Zaliv-M" vessel, which includes a system of remote automated control and handling of energy and power installations, a system for the control and handling of auxiliary mechanisms and local automation systems that serve the main engine and a system for the control and handling of vessel systems in general and cargo operations. Moreover, the "Zaliv-M" complex includes a system of automated control over technical means and a system of centralized electric power supply, which ensures electric power supply of necessary parameters to the entire complex of control systems.

The complex of technical means of automation of navigation and communication processes includes Briz-E information and computer equipment, which is to be used in solving tasks with regard to preventing collision of vessels, two radar units, a navigation complex, two radio transmitters, two radio receivers, facsimile letter-printing equipment, emergency communication means and other equipment. A system of sound-powered telephone sets and an automatic relay telephone exchange as well as a radio relay and command broadcasting system are provided for internal vessel communication.

The vessel is supplied with 3 Hall's bower anchors of 7 t mass each, including one reserve anchor and 2 72 mm caliber anchor chains that are 300 m long each. The lowering and hoisting of anchors is done by windlasses, coupled with hydraulic docking winches. Control over the work of anchor-handling gear is local and over the windlass brakes it is local manual and remote from the wheelhouse. Indicators of length of the paid out chain are installed on the tank in the area of the anchor gear control post and in the wheelhouse, where there is also an indicator of the speed at which the chain is being paid out.

The mooring gear consists of 6 automatic hydraulic docking winches of the MV160 type of the Rauma Repola firm with tractive amplification of 160 kilonewtons, 2 of which are coupled with windlasses. The hydraulic equipment of winches is located in a special room under the deck of the tank and in the steering section.

For the purpose of loading provisions and vessel supplies, the lowering and hoisting of the working boat and raft and working with cargo hoses, the vessel has an electrical crane of the KE 32-2 type with a load-lifting capacity of 32 t, an electrohydraulic crane of the KEG 12018 type with a load-lifting capacity of 120/48 t and cargo beams with a load-lifting capacity of 8, 5 and 1.25 t. A 2-speed electric travelling crane of the KEM-12 type with a load-lifting capacity of 5 t is installed in the pit of the engine room.

The rescue facilities consist of 4 metal tanker boats of the AT-30 type which can carry 30 people each, 3 inflatable rescue rafts which can carry 6 people each, 4 rescue rafts which can carry 10 people each, a working plastic motorboat and a light alloy working raft. The lowering and hoisting of rescue boats is ensured by gravitational davits with the aid of electric boat winches of the LSh4D type with tractive amplification of 63 kilonewtons.

Living quarters in the stern superstructure are designed for the accommodation of 43 people. The vessel has 8 cabin units (a study, a bedroom and a bathroom unit) for the senior command staff, 8 single-berth cabins for other members of the command staff including 2 reserve cabins, 22 single-berth cabins for the crew and 2 two-berth cabins for trainees as well as a cabin for the pilot. For the crew there is a sports hall, a swimming pool, a workshop for individual pursuits and a photo laboratory. The command dining hall is used as a movie auditorium. Arrangement and finishing of the facilities are done with consideration of modern requirements.

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BRIEFS

CONTAINER CARRIER'S MAIDEN VOYAGE--Rostov-on-Don--The container carrier named after the twice decorated city Rostov-on-Don set out on its maiden voyage. The ship was built at the shipyards of the Varna Combine imeni Georgi Dimitrov in Bulgaria. A crew of 35 Soviet seamen took delivery of the container carrier from their Bulgarian friends and hoisted the USSR State Flag on it. The ship is registered to the Azov Steamship Company. "The 'Rostov-on-Don' is built according to the latest technology and is fitted with all the necessary equipment," said A. Zagrebin, the ship's captain. "Its carrying capacity is 7,500 tons. The Bulgarian shipbuilders managed to create all the conditions for labor productivity and good crew rest: the cabins are comfortable, there is a gymnasium, pool and a movie." [Text] [By G. Gubanov] [Moscow IZVESTIYA in Russian 23 Jan 84 p 2] 12567

NEW RESEARCH VESSEL LAUNCHED--Klaypeda (TASS)--The lead vessel of the "Vilnius" scientific-research series, built at the Klaypeda shipbuilding plant "Baltiya", was launched ahead of schedule. It is designed for industrial exploration of promising areas of the Atlantic and is equipped with hydrologic and hydro-mechanical laboratories and electronic computer equipment. [Text] [Moscow VODNYY TRANSPORT in Russian 26 Jan 84 p 1] 12567

TRANSIT SHIPPING EXPANDING--Baku--The geography of transit shipping on the Caspian Sea is expanding. The first consignment of lumber from Scandinavia went to Iran via the Aktau port on the Mangyshlak. The cargo was taken aboard the motorship "Ashug Lesker." [Text] [By VODNYY TRANSPORT correspondent] [Moscow VODNYY TRANSPORT in Russian 28 Jan 84 p 1] 12567

TEST VOYAGE--Rostov-on-Don--The motorship "Devyataya Pyatiletka" of the Volga-Don River Steamship Company departed Tunis for the Black Sea on a test voyage. Its holds contain fertilizer in standard 50-kg bags packaged in thick polyethylene. The fertilizer is in transit to Iran. [Text] [By VODNYY TRANSPORT correspondent] [Moscow VODNYY TRANSPORT in Russian 31 Jan 84 p 2] 12567

ALL-WEATHER NAVIGATION--Construction of the Konstantinovsk Hydraulic Development, the second major one on the Don is complete. The collective of the "Dongidrostroy" trust erected a spillway dam, cofferdam, two locks, a fish-pass channel and five bridges with asphalt approaches. The Konstantinovskiy Rayon, where there is no railroad, now has reliable service

with many cities and stations of the oblast. The river's water level has risen four meters. Navigation on the Don in this region will become all-weather. [Text] [By V. Zanozin] [Moscow SOVETSKAYA ROSSIYA in Russian 31 Jan 84 p 1] 12567

REMOTE CONTROL SYSTEM--At the Leningrad association "Zvezda" state testing has been successfully completed on an automatic remote control system of new generation engines for "Meteor" and "Raketa" type hydrofoils. Developed in the Central Scientific Research Diesel Institute, the novelty of 1984 guarantees a considerable increase in the speed of these vessels. Furthermore, it ensures reliable speed control of the ships, nearly noiseless operation of mechanisms and will make it possible to control them at a distance of up to 100 meters, say, from the captain's cabin of a ship. The newest achievements of domestic pneumatic controls have been widely used in the system's design. Series production of a new series of diesels with the automatic control will begin this year already. [Text] [By V. Alyushinskiy] [Moscow IZVESTIYA in Russian 1 Feb 84 p 2] 12567

NEW ARCTIC MOTORSHIP--Murmansk (TASS)--The motorship "Kandalaksha" left Murmansk yesterday on its maiden Arctic voyage. The ship, an addition to the Murmansk Maritime Steamship Company, was built by the shipbuilders of Finland. Without help from icebreakers it can negotiate ice a meter thick and operate even at 50 degrees below zero. The motorship has a large refrigerated hold which enables it to be used for delivering fresh vegetables and other foodstuffs to those wintering over at remote polar stations. [Text] [Moscow VODNYY TRANSPORT in Russian 2 Feb 84 p 4] 12567

NEW FERRY-VESSEL--The first ferry-vessel for the Caspian Sea crossing has been launched by the workers of the Yugoslavia "Ulyanik" shipyard in Pula. It is designed for transporting rail cars, motor vehicles and passengers. Construction of the ferry "Sovetskiy Dagestan" opened a new page in the labor chronicle of the shipbuilding enterprise well-known in the republic. Its collective will build eight more of these craft to fill the Soviet order. By the end of 1985, along with the sea ferries for the USSR, there will be built a series of oil tankers, self-propelled barges for transporting vegetables and fruit and dozens of technical-purpose craft. [Text] [Moscow VODNYY TRANSPORT in Russian 23 Feb 84 p 1] 12567

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PORT PERFORMANCE WRAP-UP FOR JANUARY 1984

Moscow VODNYY TRANSPORT in Russian 23 Feb 84 p 2

[Article: "A Slow Start"]

[Text] Not all of the transport centers were able to overcome the difficulties of the year's beginning in January. Whereas the plan for loading and unloading operations as a whole was fulfilled by 102.4 percent (for exported goods -- by 102.8, for imported goods-- by 97.6, and for transit goods -- by 120.7), the performance volumes were distributed unequally between the centers. The transport centers of Arkhangelsk, Murmansk, Leningrad, Krasnovodsk, Makhachkala, Petropavlovsk, Vanino, and several others did not manage their monthly quotas. An objective evaluation of the state of affairs shows that there were basically no insurmountable obstacles in achieving the planned quotas.

The Kaliningradskiy transport center worked accurately in January; Ventspils, Nikolayev and Kherson confidently moved to the forward positions; and Ilichevsk, Odessa, Batumi, Vladivostok, and Nakhodka organized their work prudently.

In January, the feeding of wagons with export goods was carried out at a high level: The growing delivery discipline and the transshipped mass of products, which were dispatched in December, had an effect. The transport centers of Klaipeda, Berdyansk, Kerch, Poti, Nakhodka, Posyet, and Vostochnyy coped successfully with their monthly quotas. However, significantly fewer than planned freight cars were sent with exports to Leningrad, Odessa, Baku and Tuapse.

Individual ports have already been criticized more than once for the untimely unloading of freight cars. One might as well ask: Is it not time for the steamship company directors to introduce proper order here? Vyborg, Klaipeda, Vostochnyy, Vladivostok and Vanino tolerated freight car demurrages in January.

The balance of imported goods remaining in the ports was decreased by 400,000 tons; however, the decrease could have been larger if the plan for supplying freight cars had been fulfilled not by 95 percent but completely. The good supplying of freight cars for grain cargo was assured. Freight cars for pipes and metals were supplied worse than usual. As a result, 30,000 tons of this freight was left in the ports.

In January, the Leningrad transport center continued to work in earnest at moving out accumulated freight; a significant reduction of this freight was achieved. They were also decreased in Arkhangelsk, Murmansk, Zhdanov, Nakhodka, and Vladivostok. In January, however, a growth in old freight was detected in Ventspils, Tallin, Berdyansk, and Izmail. The situation in Kaliningrad (the amount of remaining old freight with a storage period of more than a month grew threefold here) and in Ilichevsk, which was a show-transport center in this regard for a long time, is especially unfavorable.

Various indicators characterize the removal of imported goods. The Transcaucasus, Far East, Odessa and October railroads supplied freight cars for food and perishable cargoes worse than the others; and the Northern, October and Baltic railroads -- for pipes and metal.

Under the conditions of a limited cargo base, the well coordinated work of cooperating establishments acquires great importance. Transport center collectives have acquired rich experience in mass transshipments and have learned to work with a large number of vessels and freight cars when questions concerning the general intensity of cargo operations are primary. It is necessary to select from this experience that which is valuable and that which has been acquired during mutual contacts.

Far from all cooperating institutions found a common language during January-February. It is regrettable that indicators in work were lowered in a number of large transportation centers. Why did this happen? It seems that the trouble lies in the absence of a system for organizing interconnected planning and high discipline for mutual obligations and also in the formalism in conducting frequent but ineffective meetings of the coordinating councils without a thorough study of the decisions in the immediate future. It is necessary to point out the following fact: Some steamship company and railroad chiefs try to keep aloof from this work. The transport centers based in ports are not all-powerful; they need constant help from the steamship companies, railroads, all-union associations, republic ministries, and oblast administrations. There, where the work at the beginning of the year is taking shape unsuccessfully, one clearly sees shortcomings in coordination.

Let us take, for example, the Riga transport center. During the first half of February, 1,744 freight cars were not sent to the port, the prolonged demurrage of vessels with perishable cargoes was tolerated, and the dispatching of approximately 2,000 containers with imports was anticipated in the container terminal. Evidently, the port workers and the workers at the Riga-Krasta Station and in the departments of the railroad have not renounced a formal and bureaucratic approach to the common task and have taken a fancy to mutual claims instead of mutual help. Today, the level of a transport enterprise director is primarily determined by how he implements in practice the requirements of the December 1983 and February 1984 CPSU Central Committee Plenums.

The effectiveness of the Leningrad transport center has been significantly decreased recently. The Transcaucasus regional transport center has begun

to work below its capabilities. The regularity and effectiveness of the sessions of its council have been violated. The Georgian Steamship Company must take steps on its own to strengthen its ties with its cooperating institutions, including industrial enterprises. For the time being, the results in February are as follows: Poti failed to receive 541 freight cars for loading, and 410 freight cars were not supplied for unloading to the transport centers of Batumi and Poti during the first half of the month.

A strained situation is being maintained in the Magadan transport center. Again, just as last year, the unloading of vessels in Magadan and their feeding to Vanino, where freight cars have begun to pile up -- including those with lumber for export and for ferrying -- is being delayed.

It is important that all of the participants in the transport chain from Vanino and Nakhodka to Magadan not tolerate any deviation from the vessel processing rates, which have been defined by the 1984 targets, and that the smooth shipment of freight for the ports -- no less than 8,500 tons a day -- be assured in Magadan.

The Baltic, Latvian, Black Sea, Azov, Georgian, and Far East steamship companies must in close cooperation with their cooperating institutions help the transport centers, which are operating in seaports, to successfully cope with the first quarter plans and targets and to raise their qualitative indicators in handling transportation assets.

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POOR RIVER-RAIL INTEGRATION CITED AT LENA RIVER PORTS

Moscow GUDOK in Russian 30 Nov 83 p 2

[Article by correspondent V. Seseykin: "Epilogue to Navigation"]

[Text] In late September and Osetrovo Port reported that the quota for freight handling had been exceeded by 20,000 tons. Frankly, that figure is not really so significant compared with the overall volume of work, but the river transport workers were praised nevertheless.

However, this event did not evoke any special happiness for the railroad men. Strictly speaking, what is there to be happy about if after the closing of navigation about a thousand railroad cars, which had arrived for the port, stood idle at the Lena Station and the approaches to it? Also their number was growing all the time, since with the permission of the USSR Gossnab toward the end of the season clients began quickly to make good on their obligations on shipment of freight.

After October, the river transport workers no longer schedule transshipment. Therefore, now they leisurely choose from the mass of cars only those whose unloading difficulty is less.

Why it is done this way is quite understandable: the resources of the longshoremen at present are not great--the student detachments that worked here during the navigation period have departed.

However, the railroad workers obviously remain at a loss. You see, the thousands of cars standing idle for several months are practically excluded from turnaround. At the same time, the empty cars are sorely needed by Eastern Siberian for shipments of crops, fuel and timber. Unfortunately, this is not the first time such a situation has occurred here in the fall.

By the way, the same scenario was seen this spring as well. Then, a whole lot of closed cars arrived at Osetrovo with various cargo. It was assumed that they would manage to release them before the opening of navigation. But, as it turned out, there was no one to do this work and hundreds of cars were turned into warehouses on wheels.

GUDOK has already written about this. The USSR Committee of People's Control looked into the situation there. The administrators of the port and the railroad were severely punished for the poor transshipment organization.

Nevertheless, the situation has not changed for the better. In the summer period a third of all cars with local freight on the Eastern Siberian belonged to port of Osetrovo. Many of them never reached the consignee--after a few months layover they were re-addressed to new destination points.

The main reason for such a situation is the deficiencies in transport planning. This way, for the internavigational period only 40 percent of all freight subject to transshipment is scheduled for delivery here. And this is the most favorable time, when it is relatively quiet on the Tayshet-Lena line and on the Transiberian: no track repair or major seasonal shipments.

This is another, equally serious deficiency. As a rule, in the first and fourth quarters industrial enterprises are in no hurry to fulfill the plans established for them on freight shipments to Osetrovo. Then, at the very peak of the navigation season, most suppliers begin to make up for the neglect. But, in its technical development and availability of workers, the port is not able to accept everything from the railroad workers that they present for transshipment.

Therefore, first of all it is necessary to try to have freight that is shipped over rail to arrive at Osetrovo evenly throughout the year. Those who do not fulfill their shipment plans according to calendar deadlines should be held strictly responsible.

Secondly, the quarterly planning system of shipments does not make it possible to take into account the actual unloading situation at the port. That is why such a procedure is necessary whereby the quotas are announced to both the car carriers and the consignors for each month, taking into account the specific situation at the Lena terminal and the approaches to it.

At the terminal itself, the introduction of computer technology should be accelerated. It undoubtedly will help strengthen control over the use of rolling stock, especially in loading areas located far apart. Besides that, the railroad workers need to develop further their station facilities here.

There are some things the river transport workers have to work on also. Mainly, they must resolve the problem of transshipping "perishables." For the time being, only one of six cars are being released on time at the port: there are not enough refrigerator ships and special warehouses.

Also, the system of legal mutual relations of suppliers itself is in need of improvement. Presently it still is not conducive to reducing the idle time of rolling stock. In a word, it is high time for an overall improvement of the work of the river transport and railroad workers as well as their clients.

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YAROSLAVL, RYBINSK PORT OPERATIONS FOUND INADEQUATE

Moscow VODNYY TRANSPORT in Russian 27 Oct 83 p 2

[Article by special correspondent V. Khlystov: "The Wharves Are Getting Old--Idle Time of Ships Is Increasing"]

> [Text] On 1 September our newspaper published an article "Alarm over the Stretches of Water," which told about great delays in unloading ships carrying the new grain harvest. Among other things, it referred to Yaroslavl and Rybinsk. A road team also made its way here, made up of representatives of the Central Committee of the Merchant Marine and River Workers Trade Union, the Central Committee of the Fruit and Vegetable Industry and Procurement Workers Trade Union and a VODNYY TRANSPORT correspondent. The team checked on the status of grain unloading at the wharves of the Yaroslavl Oblast Production Administration of Grain Products and the organization of socialist competition for timely and quality delivery of agricultural cargo. Today we are publishing the results of the trip.

The captain of the "Volgo-Don-149," V. Yfremov, telegraphed two republic ministries--the Ministry of the River Fleet and the Ministry of Procurement: we are standing by at the roadstead...Two days later the motor vessel was brought up for unloading. When we arrived at Yaroslavl Grain Center No 61, its unloading here had already been underway for four days. The next day 900 tons of wheat still remained in the holds. You see, the crew strove to save navigating time enroute, and now they themselves were doing the unloading--it spared the center the need to search for people to work in the holds. It's true, the Yaroslavl grain storage workers were the benefactors for "149," and it was for them, to some degree, a "burden," since although it was hauling wheat to Leningrad, it was stuck here due to a propeller break. Nevertheless, the fact remains: even before unloading the motor ship had been standing idle for more than 10 days.

Even if the incident with "Volgo-Don-149" is not typical, there are still many more examples one can cite! At that same center: the motor ship "Vyborg" stood idle during processing for 29 hours over the norm, the "Volgo-Don-5038"--43 hours. At the grain products combine: the motor ship "30 Let Pobedy" stood

idle for nearly 21 hours over the norm. At Rybinsk at the mixed feed plant, all seven unloaded ships had idle times even greater than the aforementioned ones, and one of them--as long as 107 hours; at the grain products combine the list of processed ships experiencing idle times is too long to read. Only the Rybinsk Milling Plant No 2 is steadily working ahead of schedule, however, these successes are due in part to the small wharf: heavy-freight ships simply do not dock there and it operates at a more or less light-duty variant.

The ships' crews are incurring losses, primarily in hours and days. The grain receiving enterprises are incurring losses also. The penalties paid for transport idle time are huge. But who needs this fine for wrongdoing?

It is not the goal of this publication to scold our suppliers once again. This is not difficult. It is more important to determine the reasons for the unsatisfactory work. Here they are, according to a generalization and analysis of the facts gathered on the visit.

The wharf equipment is extremely worn out. Basically, it is pipe-blowers of the "Eger" system, installed two decades ago. At that time they worked fine, but now put out half of the rated output and even less. There are no spare parts for them.

In size, the wharves themselves are not suited for mooring ships with a carrying capacity of over 2,000 tons, including the ones at the Rybinsk Grain Products Combine, where they still receive 5,000 ton ships. Unloading is impossible without re-mooring, that is, without additional time losses. The wharves are just as old as the pipe-blowers, some literally falling to pieces and requiring major repair.

There is an acute shortage of hands at the enterprises. There are no permanent longshoremen at the wharves and none are authorized. In their place they grab up people from the shops arbitrarily, and, of course, solicit them from elsewhere. The wage system is incomplete and is no incentive for workers to speed up the unloading of the holds. Finally, the ship-hour unloading norms are a subject of bitter resentment of our partners. M. Antonov, the director of the Yaroslavl Oblast Production Administration of Grain Products, says:

"In 1979 the Ministry of the River Fleet unilaterally increased the norms, while the productivity of our loaders, on the contrary, is less with each year. They also do not take into account the considerable fluctuations (up to six meters) of the level of the Volga at certain wharves, the re-moorings and other additional operations with heavy-freight ships. Last year we had to unload twice as many river-sea class motor ships as in 1980. Since all of this is not taken into account in the ship-hour norms, then the plans they send down to us are often unrealistic. There are many complications. Even in the reassigning of ships among our own wharves: the Rybinsk wharves are associated with the Moscow Steamship Company, the Yaroslavl ones--with the Volga Association..."

True, the Yaroslavl administration is taking drastic measures to improve the processing of the fleet. This year in Rybinsk at the grain products combine and the milling plant No 2 they made capital repairs to the pneumatic transport and the production equipment of the wharves, did dredging and reviewed the organization of labor. As a result, in June-July the combine improved its activities; since the start of navigation, out of 55 ships 25 have been unloaded ahead of schedule and 12 on schedule; at the milling plant--all ahead of schedule. In Yaroslavl at the 61st base, they have accomplished and in places are continuing a multi-planned reconstruction and have adapted an additional mobile pneumatic plant. Incidentally, a "mobile" was acquired also for the 3rd works of the Yaroslavl Grain Products Combine, in order to strengthen operation of the floating loader. This loader is also a "new acquisition"--it was obtained in Kostroma, written off and broken down, and was reconditioned in 1982-1983.

All the same, such measures conjure up the imperishable image of Trishka, patching a threadbare caftan instead of buying a new one. No matter how many of them there were, they were still only half-measures. The directors of the Yaroslavl administration said the same thing: "We and our ministry have long-range development plans, but they are not corroborated by practice."

As the newspaper already reported, construction of the wharf at the Rybinsk base No 60 has been stopped due to the impossibility now of obtaining the then planned pneumatic plants. We will add: the TA-45 reloader, for which they had to alter the project, is still undergoing tests and is yet far from the desired productivity. Second: it requires a different type of wharf, consequently, 452,000 rubles worth of wharf construction has turned out to be useless, purposeless work.

Erection of wharves at the Rybinsk Milling Plant No 2 and the Yaroslavl Grain Products Combine are planned for 1984 and 1985, however, limits for planned work on them in the current year are not provided by the RSFSR Ministry of Procurement and construction is being postponed for an indefinite time period.

Renovation schedules are also not being met at the Yaroslavl Milling Plant No 2 wharf. It was heavily damaged by the motor ship "Sovetskaya Kareliya" last summer. The RSFSR Ministry of the River Fleet and the Ministry of Procurement made a joint decision on 20 August 1982 on its construction. Since then the Yaroslavl workers have been corresponding with the river workers, but almost to no avail: quite recently only the surveys were made and the project, it appears, will not be ready on time. In this case we, river workers, have done ourselves a bad turn: during the second navigation season we are suffering from a lack of a grain-receiving wharf, which we ourselves put out of commission and are in no hurry to repair.

And something else about joint decisions. Socialist competition of the suppliers must play a serious role in organizing uninterrupted operation of the grain production line. This year the collectives of the Rybinsk port and grain-procurement enterprises of the city undertook appropriate socialist commitments. There are also lists of joint organizational and technical measures of the Oblast Grain Products Administration with the Yaroslavl and Rybinsk ports on preparation for navigation and acceleration of fleet processing. But this is

clearly not enough. One does not need painstaking research to see that many of the items of the joint decisions and socialist commitments remain on paper, competition conditions are not worked out, the results are not summed up and there are no moral and material incentives. It is time for the purchasing agents and the river workers to look closely at the experience of the leading transport centers' activities, to conclude agreements for an all-round competition under the motto "From mutual claims--to mutual aid and assistance" and to establish verification of the fulfillment of jointly accepted commitments and decisions.

Generally, everything that was said above in vindication of the workers of the system of the RSFSR Ministry of Procurement does not at all mean that we approve of their neglect, the more so--of the ministry itself. Our suppliers should not look back on achievements, besides of a local nature, but should constantly see what still remains to be done. Concentrate efforts on this and, perhaps, reconsider the current situation, where a wharf essentially belongs to three main administrations simultaneously, rather--to no one.

Yes, the development of the fleet clearly is outstripping the growth of capacities and the organization of grain receiving enterprises on the shores of the Volga. But this must not serve as an excuse for those lagging behind; instead it should motivate them to overcoming the deficiencies. One cannot artificially hold back progress in one industry because of troubles in another!

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BRIEFS

NEW BERTH OPERATIONAL--Yakutsk--A new berth became operational at the Olekma River port of the Lena Joint Steamship Company. It will provide mooring and processing for any type of vessel operating on the great Siberian river. Two gantry cranes will be installed at the berth this year, making it possible to specialize the berth for receiving container cargo. [VODNYY TRANSPORT correspondent] [Text] [Moscow VODNYY TRANSPORT in Russian 28 Jan 84 p 1] 12567

MURMANSK FLOATING DOCK--The lights of the mighty floating dock of the Murmansk seaport shine brightly in the darkness of the polar night. Transport ships and icebreakers, including nuclear-powered ones, cast anchor here after long ocean journeys and difficult ice voyages in the Arctic. They are easily accommodated on the keel blocks of the dock, lifting them to the surface of the Kola Bay. You become fully aware of how beautiful the modern ships are and how dashing their hull lines are. This floating ship-repair plant services its steel clients the year-round. The ships--toilers of the polar routes--leave here refreshed and shining with fresh paint, as if having rested in a sanatorium. Some of them depart right away with cargo for the East, to Budinka. You see, nowadays, navigation in the western Arctic does not shut down. [Text] [Moscow IZVESTIYA in Russian 29 Jan 84 p 3] 12567

NEW PORT EXPANDING--Izmail (Odessa Oblast) (TASS)--As it is reported from Izmail, henceforth the new Ust'-Dunaysk port will be able to receive large-capacity ships the year-round. Construction of a deep-sea navigable channel connectiong the harbor with the sea has been completed here. After construction of additional berths, ore and coal freighters will be serviced along with lighter barges. [Text] [Moscow VODNYY TRANSPORT in Russian 31 Jan 84 p 2] 12567

NEW LIFT TRUCK--Lvov (TASS)--Materials handling vehicles, production of which has begun at the Lvov association "Avtopogruzchik", are intended for operation in enclosed spaces--ship holds and warehouses. They are more maneuverable than previous models and are equipped with a diesel engine having a special device which neutralizes harmful exhaust substances. The vehicle's lifting capacity is 5 tons. This year about 20,000 lift trucks of various modifications are planned to be manufactured at the enterprise. [Text] [Moscow VODNYY TRANSPORT 7 Feb 84 p 1] 12567

SPECIALIZED TRANSFER COMPLEX--Il'ichevsk--The country's first specialized complex for transferring bagged cargo from rail cars became operational at a berth of the second freight region of the Il'ichevsk trade port. The railroad workers estimated the innovation at its true worth, for labor productivity in unloading rolling stock increased several-fold. Here is how G. Tokman, the port's chief technologist commented on it: "Until recently, piece by piece transfer of cargo in bags was the most difficult and labor-intensive operation at the port. It took six dockers several hours to unload one rail car." Putting the specialized complex into operation has freed four dockers and reduced unloading time considerably. The complex is equipped with highly productive automatic machines which can either stack the bags on pallets for future shipment or immediately dump them in large-capacity containers. Il'ichevsk Station's chief engineer, Zh. Lopatik, also gave the new complex a high evaluation: "It's tests showed excellent results," she said. "Rail cars are processed twice as fast and the quality of unloading has increased. Packaging damage has been eliminated and cargo preservation has become more reliable. But this is still not all, for there is much potential in the complex for further growth of labor productivity." [Text] [By R. Mikhaylov] [Moscow GUDOK in Russian 16 Feb 84 p 4] 12567

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CONTAINERIZED SHIPPING IMPROVEMENTS NEEDED IN FAR EAST REGION

Moscow MORSKOY FLOT in Russian No 1, Jan 84 pp 10-13

[Article by V. Mirzabeyli, "Morkonteyner" [Maritime Container] Foreign Trade Association; and E. Gagarskiy, Soyuzmorniiproyekt [State Maritime Transport Planning, Design and Scientific Research Institute under the USSR Ministry of the Maritime Fleet]: "Containerized Shipping in the Far East"]

[Text] Containerized shipping is developing at a rapid rate in our country, especially that involving large-tonnage containers. This form of shipping has required considerable capital investments to create a material and technical base for the country's containerized industrial transport system, which includes specialized forms of transport, a container pool, container transport centers, and fundamentally new technology, organization, commercial and legal support, and management of the transport process.

The capital investments made in the containerized industrial transport system are justified by the fact that containerization of freight reduces expenditures on packing materials; it provides full mechanization of loading and unloading operations; it improves the safety of the cargo being shipped; it raises the technological level of the shipping process; it simplifies warehousing, transshipping, and commercial operations; it helps raise labor productivity, increase the carrying capacity of transport means and the capacity of transport centers; and it reduces the time required to deliver freight.

When organizing delivery of freight in containers according to the "door-to-door" model, especially if these are shipments made by various forms of transport, including maritime transport, the freight owner's total effect, according to data from the Complex Transportation Problems Institute under the USSR State Planning Committee, is as follows: expenditures on box packing materials are 35-110 rubles per ton of freight; the price of 1 ton of general freight as a commodity ranges from 600 to 20,000 rubles; for every million tons of freight shipped by container there is a possible saving of 200,000 square meters of timber, 25 tons of metal, 2 million square meters of fabric, and operating costs can be cut by 8-12 million rubles depending on the type of freight; 1500-2000 workers can be freed up; losses per ton of freight shipped by container are one-tenth to one-twentieth those incurred using traditional shipping methods. Containerization also makes it possible to solve a most important social problem: people engaged in loading and unloading operations,

whose labor was difficult, monotonous, and physical, now are engaged in more attractive work, which comes down to just controlling machinery.

Over the last two five-year plans the Ministry of the Maritime Fleet created its own material and technical base for the new containerized industrial transport system, which makes it possible to support and develop containerized shipping in maritime transport.

As of 1 January 1983 the sector's specialized fleet that is engaged in shipping large-tonnage containers included 86 ships, 45 of which were cellular-construction container ships and 41 of which were vessels with horizontal loading and unloading capability. They had a total capacity of 25,000 20-ton containers. The pool of large-tonnage containers consisted of 97,000 units DFE [expansion unknown]. Transshipment of containers is performed at 33 ports, 24 of which process large-tonnage containers. High-productivity specialized complexes for transshipping containers have been built and are in operation at 8 ports.

The material and technical base that has been created for the containerized industrial shipping system made it possible to increase the volume of freight shipped in containers in 1982 to 7 million tons, which represents an 8-fold increase over the 1970 level.

Containerized shipping has presented participants in the transportation process with some fundamentally new organizational, technological, technical, commercial, legal, economic, and management questions; the timely and proper resolution of these issues has a direct influence on the efficiency of shipping and its development. One important, even key point is that containerized shipping is carried out within the framework of the containerized industrial shipping system. This condition makes new demands for intersectorial organization of operations, cooperation among the container systems in different forms of transport, among the clients and transport-expediting enterprises, and among the containerized shipping organizations in CEMA member countries and firms and companies in other countries.

In 1975 the proportion of freight shipped in large-tonnage containers using the "door-to-door" model was no higher than 20 percent. In 1982 the proportion of freight shipped this way reached 65 percent.

In 1982 containerized shipping in maritime transport accounted for 33.6 percent of the total shipments in coastal shipping; 22.6 percent in export (import); 19.1 percent in through shipping; and 24.7 percent in GIF [expansion unknown].

About 40 percent of all the containerized shipping in the sector takes place in the Far Eastern basin, even though the basin is the most complicated in terms of organization and management of container shipping and transshipping. Medium-tonnage and large-tonnage containers from the container pools of the Far Eastern, Kamchatka, and Sakhalin steamship companies, the Ministry of Railways, and their clients are used in this shipping. The entire flow of containers from foreign shippers that pass through the territory of the USSR in transit between countries in Europe and the Middle East, Japan, Hong Kong, Southeast

Asia, the Philippines, and Australia, goes through the ports of Nakhodka and Vostochnyy.

Large-tonnage container shipping by the Far Eastern Steamship Company is carried out primarily on 18 specialized vessels like the "Sestroretsk", "Kapitan Sakharov", "Pula", "Khudozhnik Sar'yan", and so on, with a total capacity of 8718 20-ton containers. Medium-tonnage containers are shipped, as a rule, on packet transports such as the "Pioner Moskvy", "Nikolay Novikov", and so on, as well as on other types of vessels. Containers are processed at 18 ports in the basin, 12 of which handle 20-ton containers. Vladivostok, Nakhodka, Vostochnyy, Magadan, and Petropavlovsk-Kamchatskiy have specialized complexes for handling large-tonnage containers. The total number of medium and large-tonnage containers that can be handled is over 1.1 million, with over 35 percent of this volume being handled by Vladivostok, Nakhodka, and Vostochnyy.

It should be pointed out that since the 9th Five-Year Plan containerized shipping in the Far Eastern basin has been carried out according to the "door-to-door" model. In 1982 shipping of this nature accounted for 71 percent of the total volume of containerized shipments in the basin.

National economic freight in containers is shipped by the Far Eastern, Kamchatka, and Sakhalin steamship companies. Containerized shipping accounts for about 58 percent, 7 percent, and 35 percent of their coastal shipments, respectively. Over 40 percent of this shipping is carried out by the Far Eastern Steamship Company mainly in large-tonnage containers. The company has a pool of over 7000 20-ton containers designated for shipping national economic freight that includes more than 100 freight dispatchers in Maritime Kray, Khabarovsk Kray, Sakhalin Oblast, and freight consignees in Magadan, Petropavlovsk-Kamchatskiy, Ust-Kamchatsk, Anadyr, Egvekinot, and elsewhere. These containers are shipped through Vladivostok and Nakhodka.

Specialists from the Far Eastern Steamship Company and the basin's ports, together with the Maritime Kray party committee have worked a great deal with freight dispatchers and consignees to provide technical and methodological assistance in preparing for and organizing the receiving and processing of 20-ton containers. By drawing in motor and rail transport in the Far Eastern basin, a regional coastal containerized industrial shipping system has been practically created. The work that has already been done made it possible in 1982 to increase by a factor of 4.5 over 1975 the volume of freight delivered in large-tonnage containers to Magadan and Kamchatka oblasts; during this same period the volume of large-tonnage container shipments to points in Chukotka and the Arctic increased by a factor of almost two. A wide range of cargo has been containerized, including freight requiring a high level of labor such as cement, sugar, grain and fodder, and cargo shipped in sacks.

It is very efficient to ship dry cargo in single-use soft containers (sacks), in which products can be transported "door-to-door"; on the maritime section of the shipping these sacks can be consolidated in large open crates, which makes it possible to ship them on container vessels and to transfer them easily at container terminals.

The Far Eastern and Kamchatka steamship companies are working on the containerization of vegetables, which is especially important with the limited periods for delivering vegetables to Magadan and Kamchatka oblasts. The required number of 20-ton containers were modernized, which made it possible to organize the shipment of potatoes, vegetables, apples, and other perishable cargo with minimal losses. In 1981 15,000 tons of fresh vegetables and potatoes were shipped, and in 1982, 18,600 tons of this type of produce was shipped. In spite of the growth in the amount of shipping being done in containers, there are still many organizational, technological, and technical problems that remain unsolved in the industrial transport system. Further development of shipping and its efficiency depends on the successful and timely resolution of these problems by all participants in the transport process.

The Kamchatka Steamship Company has done a great deal of work with local clients to organize the delivery of freight to the eastern and western coasts of Kamchatka and to the Koryak Autonomous Okrug in medium-tonnage containers, which the steamship company acquired specifically for that purpose. Under conditions of roadstead processing of ships delivering cargo to these regions, containerization makes it possible to ensure conditions of total safety for the cargo, to reduce the number of vessels used in shipping the freight, and to raise the labor productivity of dock workers several-fold.

A significant amount of freight is shipped in the Far Eastern basin in medium-tonnage containers belonging to the Ministry of Railways directly on combined railroad and water routes. Only about 3 percent of the total volume of coastal shipping is done in 20-ton containers belonging to the Ministry of Railways.

Furthermore, the Ministry of Railways is regularly reducing the delivery of freight in medium-tonnage containers on direct combined railroad and water service to the Far North and the Far East. Thus, the shipment of freight in these containers through Vladivostok and Nakhodka between 1980 and 1982 declined by 10.3 percent. Now, as a rule, orders from ministries and departments that are acting as freight dispatchers for shipping of this kind, even at the plan coordinating stage, are not being met completely. The plan volumes in 1981 were 77.8 percent of the plan volumes for 1980, and in 1982 they were 76.9 percent. The fulfillment of coordinated plans for these three years was 78.8, 88.2, and 85.9 percent, respectively; that is, in 1982 the actual volume of national economic freight delivered to regions in the Far North and Far East in containers belonging to the Ministry of Railways was 66 percent of the plan agreed upon for 1980.

It should be pointed out that during this same period the Far Eastern Steamship Company used its own pool of 20-ton containers to increase its delivery of national economic freight by 9.4 percent; in 1982 this volume exceeded the volume of freight shipped in containers from the Ministry of Railways through the ports of Vladivostok and Nakhodka by a factor of 3.

Blaming a shortage of containers, the Ministry of Railways at the same time has regularly been failing to remove empty containers from the Vanino and Vladivostok ports. As a result, tens of thousands of containers are often standing idle and blocking up the port areas.

The USSR State Planning Committee and the USSR State Committee for Material and Technical Supply have repeatedly ordered the Ministry of Railways to work in conjunction with the Ministry of the Maritime Fleet and the RSFSR Ministry of the River Fleet to develop a system for planning the removal of empty containers from ports. The Ministry of the Maritime Fleet prepared its proposals and sent them to all the interested parties. The Ministry of Railways, however, has still not resolved this issue.

Other factors hindering full utilization of the existing capacities of the containerized industrial shipping system in maritime transport in the Far Eastern basin include the following: many freight consignees in the Far North and Far East are not prepared for prompt receiving and processing of containerized freight, especially freight in 20-ton containers; and motor transport enterprises serving ports and their clients have an inadequate material and technical base.

The number of containers found at ports consistently exceeds the norm for simultaneous storage by a factor of 1.5-2. Thousands of containers also stand idle for 10 days or more (while the norm is 2 days) at freight consignee sites. The fines imposed for these delays are transferred to the State Budget and do not compensate for the expenses of maritime and railroad transport--the owners of the containers. The situation involving the removal and prompt return of containers is especially bad in Magadan. As a result, containers also pile up at the port-dispatchers in Vanino and Nakhodka, and container ships stand idle at all three ports while waiting for processing. Furthermore, because of the poor return of 20-ton containers the port of Nakhodka quite often cannot send empty containers to its clients in Maritime Kray. These issues have been discussed repeatedly by the Magadan Oblast soviet executive committee and the oblast party committee, together with the RSFSR Ministry of Motor Transport and the USSR State Committee for Material and Technical Supply. They still have not been resolved, however.

Furthermore, when the clients do not have the necessary technical equipment for normal loading and unloading of the containers, the containers can be damaged.

Calculations show that resolving the problems described above would make it possible to carry out the same volume of shipping now being performed, while reducing the container pool by no less than 30 percent.

In order to mechanize the loading and unloading of 20-ton containers, an experiment was conducted in 1981 in which two containers were loaded in Nakhodka using specially manufactured air pillow devices; the freight was then shipped by sea to Magadan, where it was unloaded from the containers by means of these same devices. The experiment showed that a person can either completely load or unload a container in 3-5 minutes. Using this method the container is not removed from the motor vehicle.

For the majority of regions in the Far North and Far East, maritime transport is the sole means by which freight is delivered. Under conditions of limited manpower resources in these harsh climate regions, further increases in the volume of freight delivered will be possible only by developing containerized

shipping. Therefore, in our opinion, it is necessary for ministries, departments, enterprises, and organizations that are located in regions of the Far North and Far East to create in 1984 and 1985 the required material and technical base for prompt receiving and processing of containers in quantities called for in the five-year plan.

It would also be worthwhile for local party and soviet organs to work with territorial administrations of the USSR State Committee for Material and Technical Supply and interested ministries and departments on reducing the number of individual freight consignees, especially in Magadan and Petropavlovsk-Kamchatskiy, with the aim of consolidating them. This would make it possible to concentrate capital investments and to develop on a proportional basis high-capacity, modern, mechanized warehousing services for receiving and processing containers.

The RSFSR Ministry of Motor Transport should take measures to develop motor transport enterprises in Vladivostok, Nakhodka, Magadan, and Petropavlovsk-Kamchatskiy, with the aim of providing increasing containerized freight shipments, especially in 20-ton containers.

The level of containerized shipping of national economic freight that has been achieved and the prospects for its development also present certain problems for maritime transport. During the current five-year plan, the second specialized container complex in Magadan will be built and put into operation, in addition to the first section of a container complex in the port of Vanino. Also on the agenda is further development of the capacities for processing 20-ton containers at the ports of Anadyr, Egvekinot, Provideniya, Pevek, and Korsakov. Even though the problem of providing more and more containerized shipping is being partially solved by using multi-purpose vessels such as the "Noril'sk" in the basin, it will apparently be necessary to supply the basin with container ships for the 12th Five-Year Plan. And on the Vanino-Magadan line, when the second section of the container complex in the Vanino port is completed, there will be a need for three UL-class container ships each with a capacity of 700 20-ton containers.

Steamship companies in the basin, and the Sakhalin Steamship Company in particular, in addition to large-tonnage containers, need medium-tonnage containers to meet the growing demands of consignees located along the coast of the Sea of Okhotsk, in the Kuril Islands, Kamchatka, Chukotka, and in the Arctic. Unfortunately, over the course of the entire five-year plan the USSR State Planning Committee has not allocated any medium-tonnage containers for the Ministry of the Maritime Fleet. The insignificant number of containers of this type that were allocated during the 11th Five-Year Plan not only cannot meet the sector's needs, they cannot even meet the needs of the Far Eastern basin.

Resolving these problems will represent a new step along the path toward further improving container services in maritime transport.

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